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THE HOME OF

finish

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The only independently published trade publication devoted exclusively to Porcelain Enameling and Ceramic Finishing on metal.

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finish

CERAMIC FINISHES ON METAL

A new Boland continuous furnace at Industrial Enameling, Inc., New Orleans, La.

Another new BOLAND Furnace is doing a nationally known job

Advertisers of nationally known products such as those represented by the signs shown in this picture have a right to expect the best in porcelain enameled products. These signs are shown against a background of a new Boland SINGLE FLOW continuous furnace in which they were fired.

Whether it is signs or parts for ranges, refrigerators, heaters, table tops, reflectors, sinks, bathtubs — any fabricated metal product — the controlled even heating of the Boland firing zone will produce a better piece of finished ware.

Be sure your next continuous furnace has all of these features: straight away, SINGLE FLOW design; the FLOATING ROOF (Boland Patent 2,156,008); and strong, heavily insulated overall construction "built to last." Only a Boland-built furnace gives you all of these features.

The best selling point for any Boland furnace is the opinion of a user. Satisfied users are one big reason for the increasing number of Boland-built furnaces.

ALBERT J. BOLAND COMPANY

407 NORTH EIGHTH BUILDING • ST. LOUIS 1, MO.

Designers and Builders of Continuous and Box Type Enameling Furnaces

STOP REJECTS IN YOUR

PICKLE ROOM

WITH INDUSTRIAL PRESSURE FILTERS

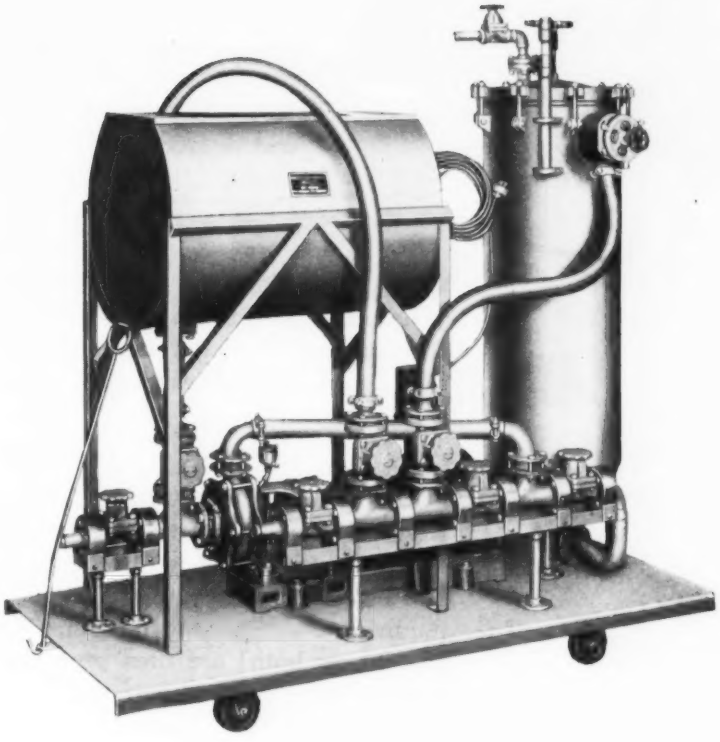
Leading enameling plants who have been using Industrial filters to purify their pickling solutions know the real meaning of efficient operation.

Pickling solutions must be purified to avoid the costly rejects that surely follow neglect of this important step in the preparation of metal for enameling.

Modern production methods are so streamlined that only the most dependable filters are economical to operate.

Industrial filters have been tried and proven in the enameling industry over a period of many years. They are built of the finest materials to serve their owners year after year without loss of production due to failure.

The use of Industrial pressure filters will enable you to operate your pickle room in the most efficient manner because they keep solutions pure all the time.



Illustrated above is a filter used by average sized enameling plants.

Let us recommend the proper equipment to operate your pickle room efficiently.

INDUSTRIAL FILTER & PUMP MFG CO.

1621-39 WEST CARROLL AVENUE CHICAGO 12, ILLINOIS

SEE WHAT YOU GET...

in Ferro's newest contribution to BETTER PORCELAIN ENAMELING

Now you can have metal cleaning (both the cleaners and process) "made-to-order" for your specific requirements. Here's how it's done:

● Ferro technicians make a thorough study of your plant operations. A Report of Survey is then submitted to our laboratory, along with samples of drawing compounds, water, etc.

● All data is *checked and double checked* at the Cleaner Laboratory in Cleveland. Quantitative and qualitative tests are run. Then, Ferro chemists develop tailor-made cleaners and a cleaning procedure exactly suited for your requirements. Recommendations (for cleaner, process, or both) are then presented for your consideration.

● When our proposal is approved, Ferro technicians supervise the change-over—*check and recheck* every phase of the operation—then follow up with periodic inspections to assure continued good cleaning.

With such a service, it's little wonder that Ferro Cleaners and Cleaning Systems provide better metal cleaning at lower cost... and with fewer production rejects. Let us show you how this newest Porcelain enameling service can work for you.

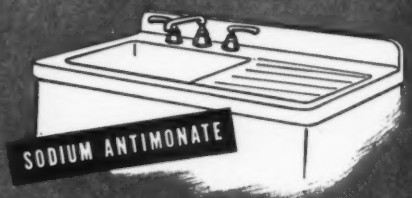
FERRO

ENAMEL CORPORATION

4150 East 56th Street
Cleveland 5, Ohio

7 features for your enamels with M&T SODIUM ANTIMONATE

- true white color
- high degree of opacity
- improved lustre
- greater stability
- high strength
- maximum adhesion
- uniform high quality



You can be sure of the right start to a bright finish for sheet steel or cast iron sanitary ware enamels when you use Metal & Thermit's Sodium Antimonate opacifier.

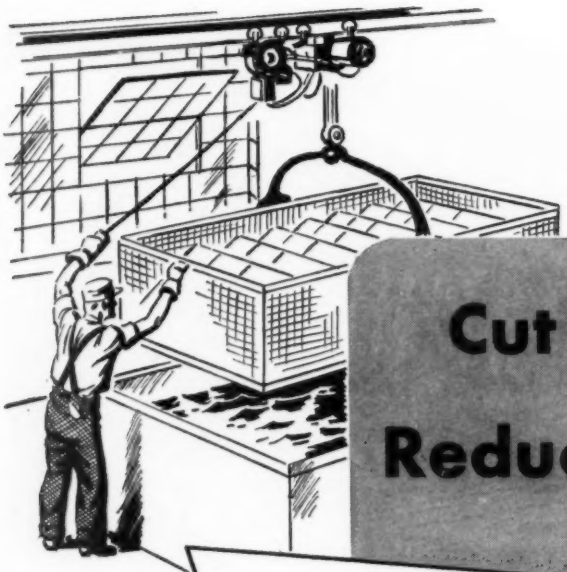
Exacting methods of manufacture—plus the most modern processing equipment—are your assurance of a uniform, high quality opacifier capable of enhancing both the beauty and durability of enamels.

The facilities of our Ceramics Laboratory are available to help you get the *best* results—at *lowest possible* cost.

METAL & THERMIT CORPORATION

120 BROADWAY · NEW YORK 5, N. Y.

M & T OPACIFIERS
TIN OXIDE
ANTIMONY OXIDE
SODIUM ANTIMONATE
ULTROX
ZIRCON



Cut Cleaning Time
and
Reduce Cleaning Costs
with

Cowles
SOAKLEEN
Liquid Emulsion Cleaner

COWLES TECHNICAL SERVICE
gladly furnished upon request.

Cowles SOAKLEEN does a real job of removing stubborn soil and oils from metal parts in pre-soak cleaning. All following cleaning operations are reduced to a minimum.

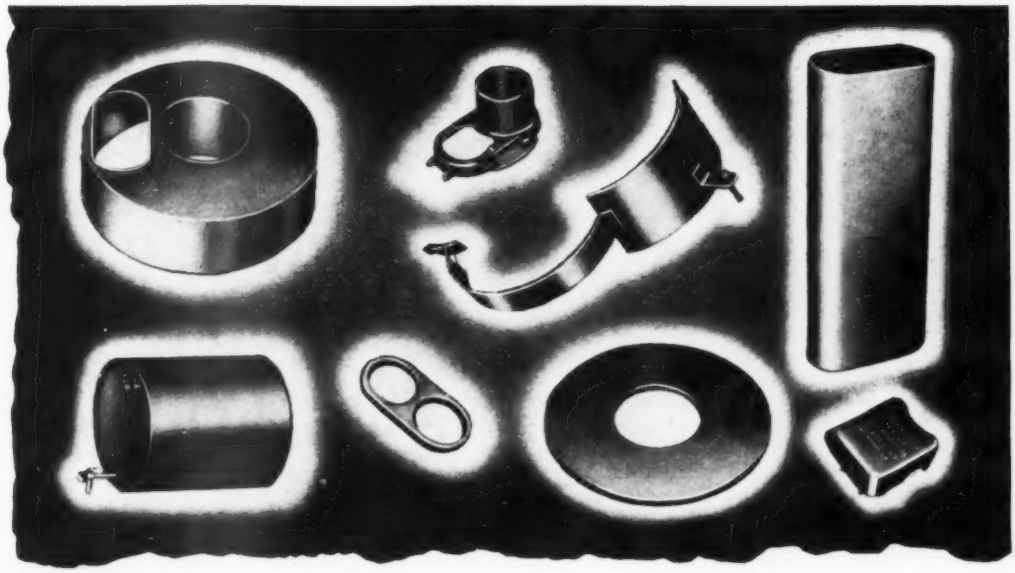
SOAKLEEN works unusually well for cleaning steel before enameling, plating and other finishes.

SOAKLEEN is simple and easy to use, is non-toxic, cuts cleaning time and reduces cleaning costs. Place a trial order today—orders shipped promptly from convenient warehouse stocks.

Package—55 gal. non-returnable steel drums.

The Cowles Detergent Company

METAL CLEANER DEPARTMENT
7016 EUCLID AVENUE **CLEVELAND 3, OHIO**



STOCK TANK HEATER COMPLETELY ASSEMBLED AND PACKED FOR SHIPMENT BY MONARCH

another COMPLETELY PACKAGED UNIT...

The well known Hartung Gold Medal Oil Burning Tank Heater, which, due to its unique design and dependable working qualities, backed by New Monarch's rigid and precise construction, is today the choice of progressive farmers and stockmen everywhere, also used throughout the world by the U. S. Armed Forces.

This splendid heater is another of New Monarch's Completely Packaged units — stamped, welded, assembled, finished, and packaged for individual shipment, a feature highly desired by the manufacturer for his Distributors and Dealers. This is but another of the many services offered by New Monarch to those who find their facilities overcrowded or inadequate, depending, of course, on the availability of the material required.

MONARCH QUALITY

When you think of Stampings, think of

NEW MONARCH MACHINE & STAMPING CO.

406 S.W. NINTH STREET DES MOINES 9, IOWA

WHEN *Lasting Beauty* IS A SELLING POINT...

PORCELFRIT BUILDS SALES!

THE 1948 SERVEL REFRIGERATOR

● Many products depend upon eye appeal as one of their features. And not just eye appeal while the article is on the sales floor . . . but years later.

If your product must present an attractive appearance over a long period, depend . . . as many leading manufacturers do . . . upon PORCELFRIT to get repeat business. Because PORCELFRIT is a product of both laboratory and actual job enameling, it has proved practical before you ever get it. We *know* it's right before we ship it. Moreover, our ceramic engineers . . . at no cost to you . . . will see that it's right in *your* plant. String along with other first-line manufacturers . . . use PORCELFRIT!

INGRAM-RICHARDSON MFG. CO., OF INDIANA, INC.
OFFICES, LABORATORY AND PLANT
FRANKFORT, INDIANA, U. S. A.

Genuine PORCELAIN ENAMEL
THE LIFETIME FINISH

ING·RICH
PORCELFRIT
"The Plant Tested Frit"

THE Finish Line

IF PERSISTENCE HAS ITS GOOD POINTS — we plan to make the most of them in connection with our campaign for a return to porcelain enameled exteriors for domestic refrigerators. Should one of the important refrigerator manufacturers take sufficient notice of our claims to institute a thorough investigation of the current situation, we are confident that *action* would result. Let just *one* of the principal producers take action, and the ultimate result will be a definite swing-back to porcelain enamel for refrigerator exteriors by the industry as a whole.

Our reason for repeating on this subject after having devoted November's Finish Line to it stems from a little round-table discussion which we had the privilege of sitting in on last evening. We joined a small group among the ceramic industry members who were gathered for a meeting of the Chicago Section of the American Ceramic Society.

Comments from Finish Line readers

A discussion started with comments on the November Finish Line, in which we compared the present condition of two refrigerators of identical make and size, but with different finishes, and presented typical examples of homeowners who wouldn't buy new refrigerators until they can procure porcelain enameled exteriors.

Frank Porter, of Inland Steel, led off with the information that within the last two weeks two different shop men had stopped him to ask if he knew where they could go to buy porcelain enameled refrigerators. They had been unable to find them on the sales floors.

Wayne Deringer, of A. O. Smith Corporation, then chimed in with a description of his 1936 model refrigerator, the finish of which still looks like new after eleven years — *It's porcelain enameled!*

Porter then told of a typical incident where a homeowner remodeled his kitchen, and upon bringing his refrigerator out of the pantry, found much to his chagrin that its yellow exterior prevented its being used in the newly decorated kitchen.

Dr. Ralph Cook, of the University of Illinois, told of a refrigerator that was used for six or seven years in the laboratory of the manufacturing plant where it was made. It had been protected on only one side while in use and when — due to re-arrangement of the laboratory — it was moved, the protected side was found to be of an entirely different color than the balance of the cabinet.

Roger Fellows, of Chicago Vitreous, then put in his boost for porcelain enamel by describing his 1933 refrigerator with the porcelain enamel finish just like new.

Why not run your own "quiz" session?

Certainly you may say that in every instance the comments outlined came from men who may be prejudiced in favor of porcelain enamel. Prejudice or no prejudice, it is our contention that the facts they offered are typical of information that can be picked up in any similar group, in any section of the United States. Keep in mind, too, that the facts come from men living inland, and that you may expect to get even more convincing information in the seaboard states.

Our suggestion to the manufacturer

It's quite apparent that the small "dribble" of production on porcelain enameled cabinets coming from today's refrigerator manufacturers is only a "drop in the bucket" compared to the existing demand among refrigerator buyers.

Step No. I calls for an increase in production by the manufacturers who are now building porcelain enameled cabinets, and plans for early production by those who are not producing them now.

We make no mention of price in connection with this suggestion, for we believe the homeowner today is more than willing to pay a premium to get the one type of finish that will last throughout the useful life of the refrigerator mechanism.

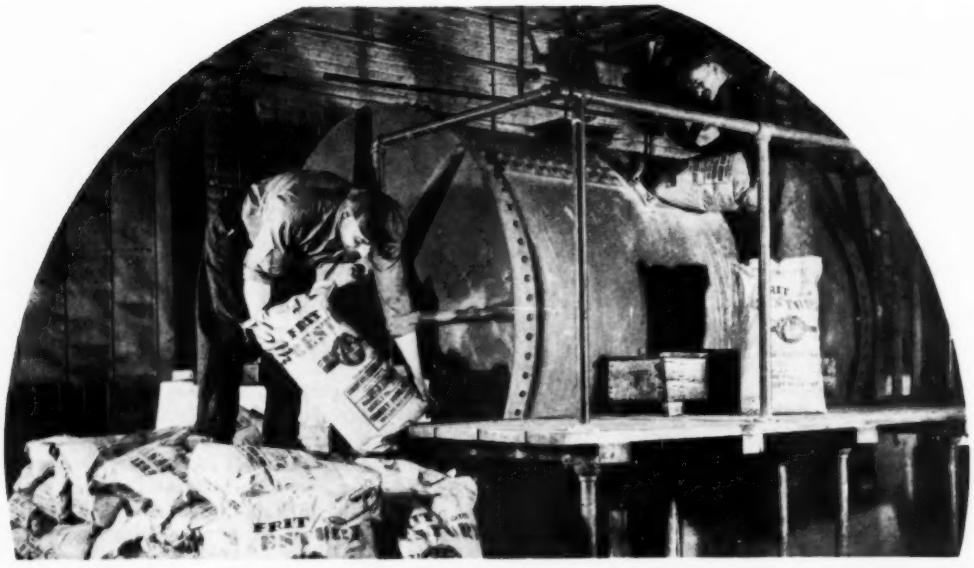
Step No. II calls for the ultimate introduction of a standard model all-porcelain enameled refrigerator to the manufacturers' complete line. By "standard" we mean that the refrigerator would be sold with the same equipment as the parallel model in organic finish. A refrigerator of this type, properly designed, scheduled at production comparable to its parallel model, and finished with the latest types of porcelain enamel, could then be sold at a minimum differential in retail price.

We repeat — The first manufacturer who presents a refrigerator of this type to the public will not only find an overwhelming acceptance. but will cement relationships with the ultimate user to the point where every user will become a salesman for his product.

The opportunist will say, "They last *too* long. We want repeat orders." But, the "long-run" manufacturer knows that repeat sales come only from users who have had years of satisfactory use from their earlier purchase.

Dana Chase

EDITOR AND PUBLISHER



6,000 POUNDS AT A BITE

MILLS of all sizes are busy every day grinding Century frits, but this large mill has an exceptional "appetite"—it takes 6,000 pounds at a bite. It grinds Century ground coat enamel in one of the country's leading stove manufacturing plants.

Over 4,500,000 pounds of Century ground coat frits have been prepared for application in this one mill. It keeps on grinding Century frits because the frits keep on producing the kind of trouble-free ground coat finish that keeps rejects down and adherence at its best.

It's the "grip" that counts in ground coats. This ability to "stay put" is of great importance on the modern kitchen range. Century time-proved frits will give your product this same advantage and you can be sure of your enamel adherence.

You take no chance in specifying Century time-proved ground coat frits, except a good chance of saving money in enamel plant operating costs. Why not try them now?

FRIT from CENTURY

FRIT MASTERS

CENTURY VITREOUS ENAMEL COMPANY, 6641-61 S. Narragansett Ave., Chicago 38, Ill.

Fast and ACCURATE *on the Draw*

Actual job records have proved that Toncan Enameling Iron, processed for *deep drawing,* is consistently *fast* and *accurate* . . . speeds production, cuts down rejects. It *flows*—freely and uniformly—into every corner of the die without wrinkles, cracks or strain lines.

Toncan Enameling Iron can be processed to turn out the finest flat work, too . . . panel sections that can be fired time after time without sagging, twisting or warping.

Or, when the work demands it, Toncan Enameling Iron can be developed to *combine* deep drawing *and* flat work qualities. And, it produces strong, clean welds at top speed.

Just tell Republic your particular fabricating problem. Republic metallurgists know ceramics as well as metals—can produce Toncan Enameling Iron just as you need it for top production, improved product quality and lower unit cost.

Republic

REPUBLIC STEEL

TONCAN ENAMELING IRON

REG. U. S. PAT. OFF.

REPUBLIC STEEL CORPORATION
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Bldg., New York 17, N. Y.

Other Republic Products include Carbon, Alloy and Stainless Steels—Pipe, Sheets, Strip, Bars, Wire, Pig Iron, Bolts and Nuts, Tubing

2 WAYS
TO APPROACH A COLOR PROBLEM

TINT THE AIR WITH HUES AND TRIES OR ASK DRAKENFELD TO HELP

WHEN the atmosphere is heavy with experiments to find a way to solve a porcelain enamel color problem, you end up in a mental whirl, work lags on other important jobs, and production schedules are upset.

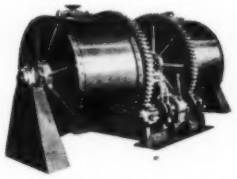
For many years porcelain enamel manufacturers have been turning over their "color headaches" to Drakenfeld. There's a reason: whatever the particular requirement — whether a new color must be created or an old one matched — our technological staff goes to work with a will. Results have proved that their know-how can step up production, reduce rejects and produce better ware at greater profit. No wonder Drakenfeld porcelain enamel colors are used so widely for signs, appliances and utensils for home, institution and profession, and for porcelain enameled products applied architecturally and in industry.

We would like the opportunity of showing you how our porcelain enamel color research facilities can help you get rid of "color headaches." Avail yourself of Drakenfeld's broad experience and friendly cooperative service. Let us talk over your problems and requirements. Write us today.

DEPENDABLE SERVICE ON: Oxide Colors . . . Screening Paste . . . Graining Colors . . . Squeegee Oils and Mediums . . . Rotospray Sifters . . . Steveco Grinding Mills . . . Porcelain Grinding Balls . . . Porcelain Mill Linings.

5 SAVINGS WITH STEVECO MILLS

Time
Labor
Horsepower
Floor Space
Initial Costs



Steveco high-efficiency duplex mills wet-grind porcelain enamel materials better, faster and at low cost. Many outstanding construction features proved in hard day-after-day service in many plants. Wide range of sizes and linings, with all types of drives. Write for catalog, then let us study your grinding needs and recommend the correct type for your requirements.

Rotospray — a millroom must!

The Rotospray helps you get properly prepared slip for the production line. Indispensable for "reconditioning" enamel slip. Equally valuable at ground coat dip tanks. Ideal for any job that requires speedy, positive sieving. Strains through a long-life vertical screen — no clogging. Standard and Junior sizes. Capacities range from 300 to 1,000 G.P.H., depending on nature and specific gravity of product, screen mesh and sifter size. Write for descriptive folder.

Drakenfeld

YOUR PARTNER IN SOLVING COLOR PROBLEMS

B. F. DRAKENFELD & Co., Inc. 45-47 Park Place, New York 7, N. Y.

Factory and Laboratories: Washington, Pa.

Pacific Coast Agents: Braun Corp., Los Angeles 21 . . . Braun-Knecht-Heimann Co., San Francisco 19

Operating the world's largest porcelain enameling plant

production of all-porcelain refrigerator cabinets, all-porcelain automatic washers, electric ranges, and porcelain parts for refrigerators, water coolers, and water heaters

By Dan J. Cherry • SUPERVISOR OF ENAMELING OPERATIONS, AND
Robert J. Baker • GENERAL FOREMAN OF PICKLING AND ENAMEL PREPARATION, FRIGIDAIRE DIVISION, GENERAL MOTORS CORPORATION, PLANT 2, DAYTON, O.

Exclusive feature finish

The Frigidaire porcelain enameling plant has long been referred to as the world's largest porcelain enameling operation. While we feel that size alone is not the proper criterion for judging plant operation, it is our job here at Frigidaire to see that quality and quantity of production is proportionate to the investment in equipment and facilities.

During a recent visit to our porcelain plant by the editor of *finish*, we were requested to outline the facilities and processing requirements in our porcelain division located in Plant No. 2.

The distinctive feature of the departmental layout is the utilization of a comparatively small area of floor space, considering the variety and volume of parts processed. The operating floor space, exclusive of millroom storage and area actually occupied by equipment, but including aisles, is only 25,000 sq. ft. To achieve the continuous flow of parts required to maintain schedules is a very intricate scheduling problem, and for fast movement and uniform flow of parts monorail conveyors are used extensively. There is approximately 20,000 lineal feet of monorail conveyor used for the handling of parts to be pickled, porcelain processing, and the distribution of porcelain parts to the various assembly lines. Schedules must be very closely synchronized with both the fabrication departments and the assembly departments. With all parts produced in porcelain considered as a whole, less than eight hours production is carried in bank, either ahead of pickle or as finished parts ahead of assembly.

Raw material handling for the millroom

The millroom consists of three sections known as the "dry storage" for incoming raw materials, space for operating mills, and a "wet storage" for milled enamel. The dry storage and wet storage are adjacent but separately enclosed areas on the roof of the one-story factory building. The mills are on factory floor level, directly under the dry storage area. The material flow is to unload from freight cars or trucks with automatic transfer equipment to the dry storage area, drop the material into the mills below, pump the milled enamel to storage tanks in the wet storage area (where it is subsequently transferred to adjacent pressure tanks in the same area), and piped to points of usage. The system centralizes the control of enamels, reduces waste of materials, and saves floor space at the points of usage. This system is not in full operation at present writing but is rapidly nearing completion.

The dry storage room (200 ft. long x 35 ft. wide) provides sufficient space for storing approximately 1-¼ million pounds of frit with proportionate quantities of various materials used as mill additions. The frit and mill additions are loaded into hoppers and dropped through chutes into the mills below.

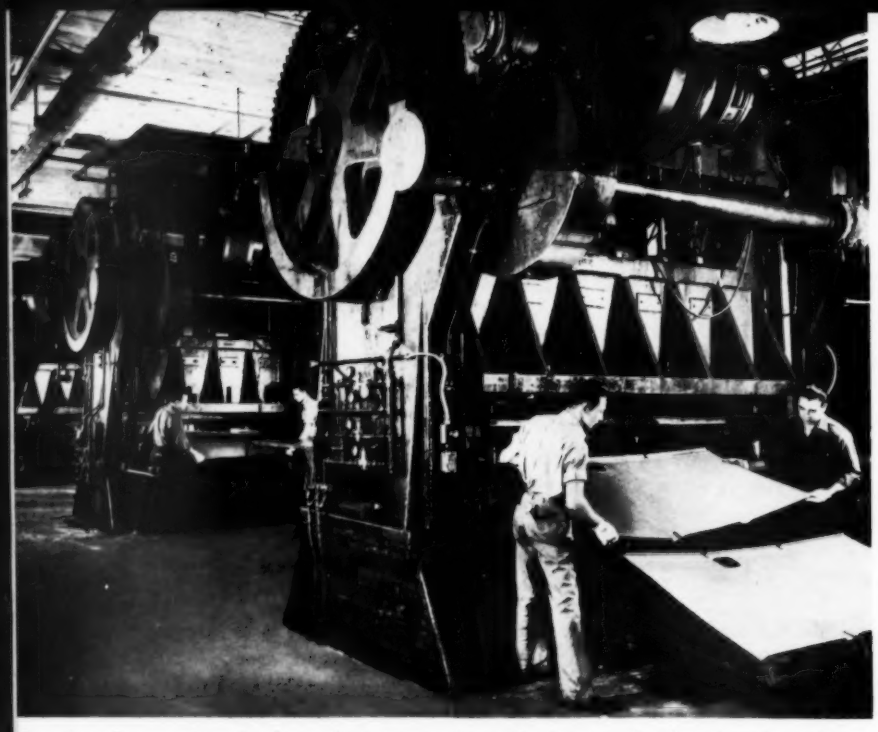
An air conditioned room parallel to the dry storage is used for storage of milled enamel. There are nineteen 500-gallon porcelain-block-lined tanks which will hold approximately one day's supply of enamel. Adjacent to the storage tanks are stainless lined pressure tanks of 70-250 gallon capacity. The gravity and "pick-up" of the enamel is adjusted in the storage tanks prior to being pumped through a centrifugal sieve and magnetic separator into the pressure tanks.

The enamel is piped to points of usage through 1-¼" monel pipe, which is insulated and water cooled to maintain uniform enamel temperature.

Milling capacity consists of 14 mills including two 3′ dia. x 4′ long mills, eight 6′ x 5′ mills and four 6′ x 8′ mills. The enamel is unloaded from the mills by means of air pressure and pumped into the overhead storage tanks through a system of monel pipes.

The control laboratory contains the equipment necessary for accurate processing control of the enamels. This equipment consists of the following items: Rotap and screens, spray booth, drier, small furnace, balance, gravity cylinders, weigh cylinders, and sample mills. The gravity and pick-up are controlled very accurately before delivery for use.

A water deionizing installation is located on the factory floor level ad-



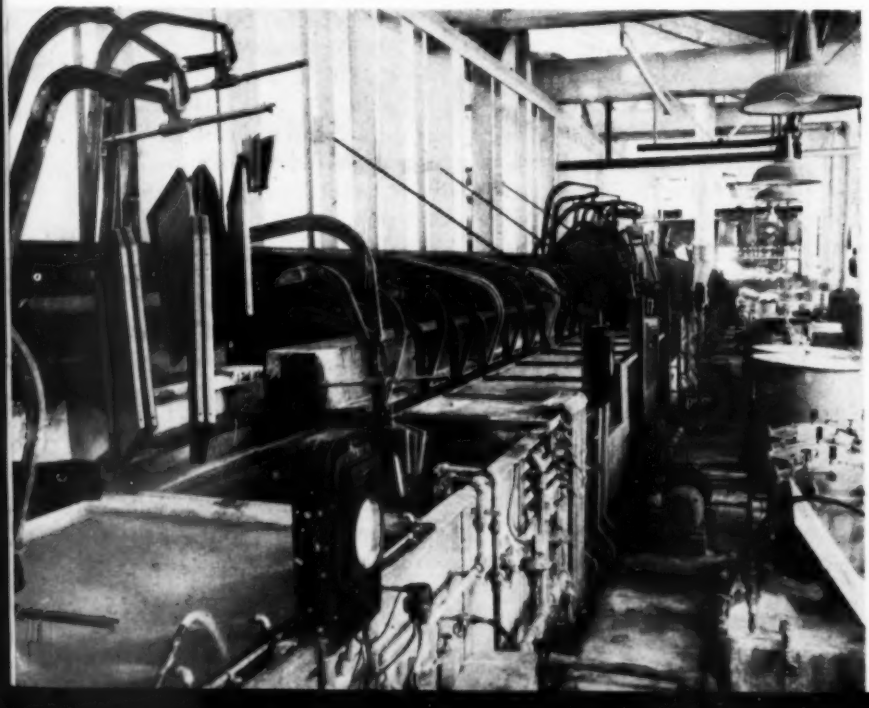
A series of operations in these giant presses form the front and sides of each washer cabinet from a single sheet of steel.

jacent to the mills but is not in use pending completion of a piping system.

Arm-type continuous pickling machines

The pickling machines are laid out in such a manner as to allow end loading and unloading, thus affording maximum access for conveyors feeding parts to the machines and taking pickled parts away. Cycles are so arranged that acid-pickling is performed in two separate tanks with the transfer between tanks occuring at the end of each machine. Thus by not having any parts submerged in solutions at either end of the machines, mechanical strains are greatly reduced under the extremely heavy load conditions required by the size and volume of parts processed. Also, because of the immense size of tanks required, the divided acid tank principle considerably reduces loss in event of tank failure, and allows operations to continue under conditions where the first acid tank may become contaminated. Another feature which assists materially in maintaining production and quality is the use of double rinse tanks subsequent to cleaning and previous to the first acid treatment. The second rinse tank is provided with a skimmer and overflows continually into the first rinse tank, thus maintaining excellent rinse conditions in the last tank before the ware enters the acid, with no greater use of water than would be required to operate a single rinse tank less effectively. Another feature of the pickling cycle is the unusually long time element allowed for nickel-flash application. This allows considerable variation in controlling the thickness of the nickel deposition, and low operating temperatures assisting in obtaining more uniform control.

An overall view of the giant pickling machine in Frigidaire's porcelain department in the company's Moraine City plant.

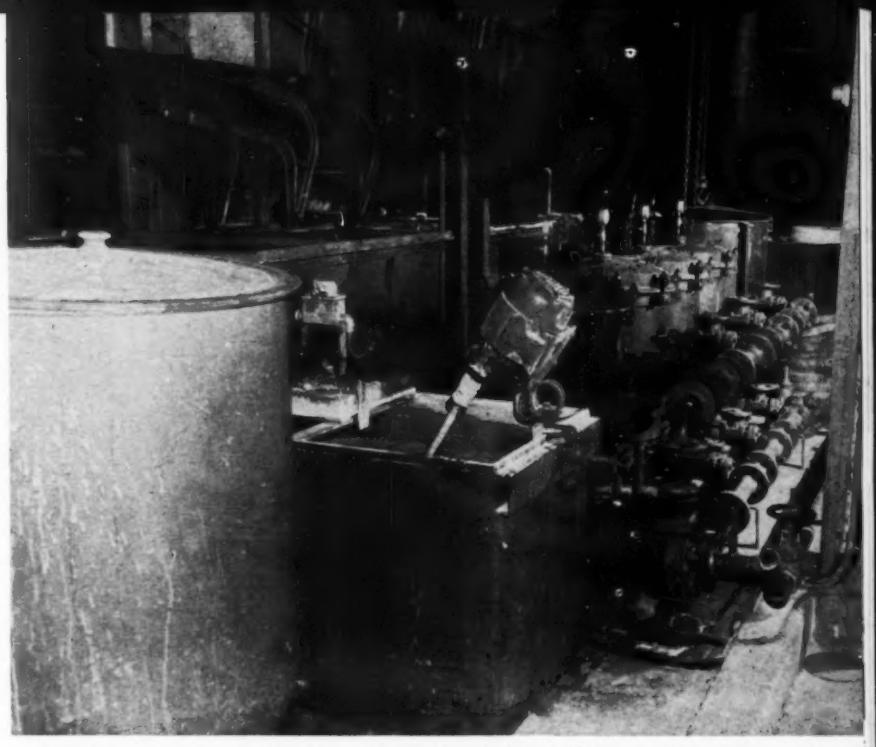


The two parallel pickle machines are approximately 210 ft. long and identical in operating cycle and construction except in width and depth of tanks, and height of lift. The larger of the machines, which was especially designed for Frigidaire to accommodate one-piece refrigerator cabinets, has an 80″ vertical lift and large tanks, some of which exceed 10,000 gallons capacity. The cycles are in the following sequence: load, clean, hot dip and spray rinse, clean, hot dip and spray rinse, hot dip rinse, pickle, transfer (end of machine), pickle, cold rinse, nickel flash, neutralize, alkali rinse, dry, unload. Cleaner tanks are heated with closed coils on both sides of the tanks. Pickle tanks are lead lined and heated with monel steam jets. Nickel tanks are rubber-lined and heated with monel steam jets. Neutralizer and rinse tanks are heated with steam jets. Steam condensate is used for make-up and additions

to all cleaner and neutralizer tanks. The dryers are short, high temperature units heated with infra-red gas burner equipment with full automatic controls. All tanks are ventilated and exhausted through suction fans on the roof of the factory building.

Auxiliary pickle equipment includes nickel and neutralizer filters, pre-mix tanks for adding nickel salts and neutralizer, automatic temperature controllers and recorders on all major tanks, and 250 gallon portable steel carboys to transport and handle concentrated sulphuric acid. The acid is transferred to the pickle tanks using 8 lbs. air pressure on the steel carboys. The acid carboys are equipped with safety blow-out plugs to avoid any danger of accidents due to using too much pressure, and are periodically pressure-tested.

Special hanging tools have been designed for the pickling machines to accommodate large parts, and obtain good drainage as the parts emerge from solutions. Because of the necessity of feeding several furnace units from the production of these two machines, excessively heavy loads are carried and tooling refinements have been incorporated, such as suspending two hydrators inside of each refrigerator liner pickled.



Filtering equipment is lined up along side of the pickling machine. The equipment is essential for the proper maintenance of nickel and neutralizer solutions.

Ground coat application

Ground coat is dipped on all parts except refrigerator cabinet shells and doors, washer shells, and range tops. These parts are sprayed in ground coat with the parts suspended from a moving monorail conveyor. After drying, sprayed parts are transferred from the spray conveyor directly onto the furnace conveyor without additional reinforcing.

As an example of dipping procedure, refrigerator liners, for instance, are rolled in dip tanks adjacent to a monorail conveyor equipped with special hangers. The liners are placed in the hangers while draining, and the drain and beading operations completed on the moving conveyor, which carrys the liners through a dryer, a reinforcing booth, and then to a transfer point where they are loaded onto the furnace conveyor.

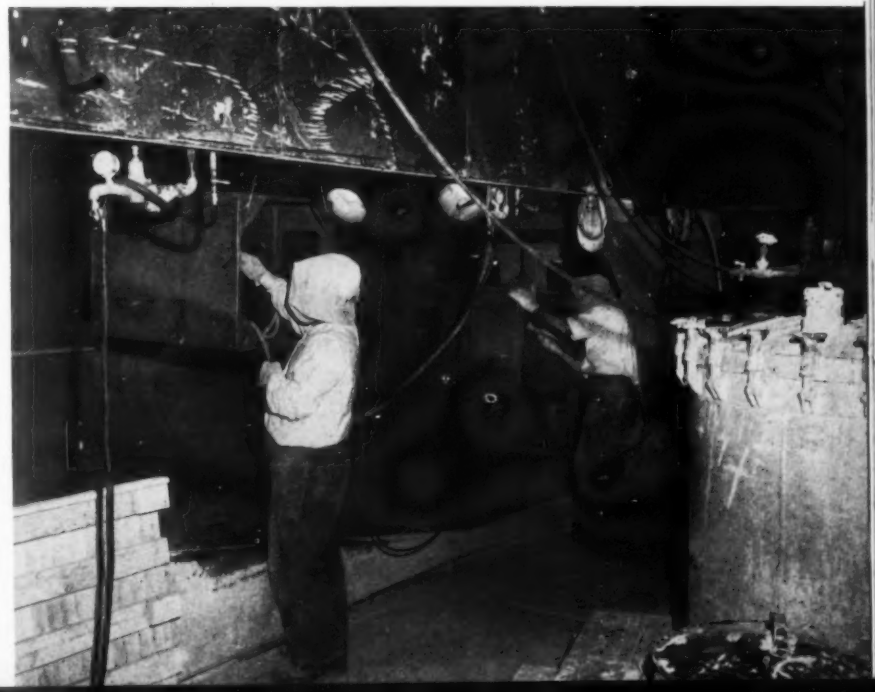
Ground coat dryers are heated with circulating hot air from direct gas fired thermostatically controlled units mounted on top of the dryers.

Cover coat application

Our units are set up for one cover coat application on all parts requiring a white finish. Manual spray methods are used on all large irregular shapes such as cabinet shells and refrigerator liners. Flat parts such as range panels and refrigerator inside door panels are sprayed on an endless cable conveyor with an automatic spray machine.

All spraying and brushing is per-

Applying the ground coat to cabinets of Frigidaire's new automatic clothes washers which are finished in porcelain inside and out. (Note 250-gallon supply tank.)

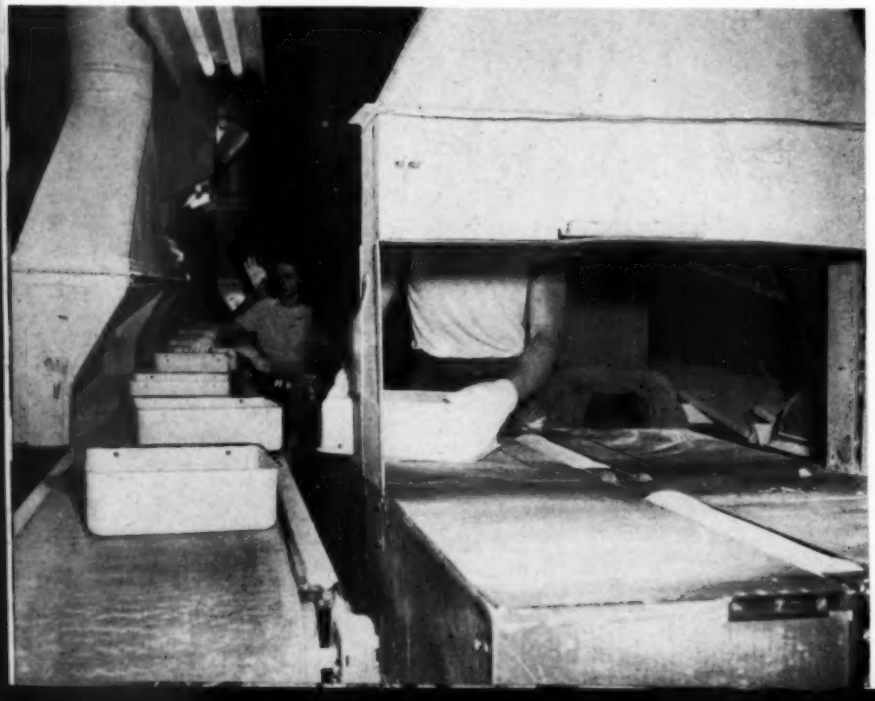


Applying the finish porcelain coat to refrigerator cabinets as conveyor line passes through spray booth. Note method of feeding fresh air to operator's hood.

formed on moving conveyors, the spray conveyors passing through dryers and brushing areas to loading points adjacent to the furnace conveyors. The major brushing installations are air conditioned, and all brushing stations are ventilated. Dust from spraying operations is collected in dry-type bag filter units located on the roof of the factory. The filtered air is cooled and returned to the factory.

Hydrators for refrigerators are dipped and drained in cover coat in a one coat acid resisting enamel. After passing through a dryer on the dip conveyor, the hydrators are removed from the conveyor by an operator who rough brushes the top flange on a special brushing machine, then transfers the part to a sponge-rubber covered conveyor where the brushing is completed while the part is in transit to the furnace loading point.

A unique revolving brush is employed on the hydrator line. The worker merely has to run the hydrator over rotating brush to remove excess enamel from the top edges.



Cover coat dryers are constructed and heated the same as the ground coat dryers with circulating hot air from direct gas fired units.

Continuous furnaces

The furnaces are conventional U type, nine burner, gas fired units. Proportioning type gas feed equipment is used with sensitive pyrometric recorders and controllers. Limitrols are installed on each furnace for protection of the equipment.

Furnace tools have been designed to allow interchangeability of parts wherever possible. The basic tooling of all furnaces is standardized. To afford maximum flexibility in scheduling, the six continuous furnaces are equipped with complementing spray booths, dryers, etc., to operate in pairs, numbering as shown on the general diagram, No. 1 and No. 2, No. 3 and No. 4, No. 5 and No. 6. Furnaces No. 1 and No. 2 are constructed with 7′ vertical clearance to process large shapes such as refrigerator cabinet shells, washer shells, range tops, range frames, etc. Furnaces No. 3 and No. 4 have 5′ vertical clearance and are used almost exclusively for refrigerator liner production. In order to provide a maximum of flexibility and still maintain full furnace loading, No. 5 and No. 6 furnaces are each serviced with two separate processing set-ups. Hydrators for refrigerators are processed in a continuous sequence through No. 5 and No. 6 furnaces using approximately half of the capacity of each furnace. Flat parts such as range panels or refrigerator inside door pans are dipped in ground coat on the alternate conveyor feeding No. 5 furnace, and subsequently finished on the automatic spray set-up provided for No. 6 unit, thus utilizing the full capacity of both furnaces.

Special alloy hangers used for

firing refrigerator cabinet shells are also used for processing with one-man mechanical handling at transfer points. Thus, hangers, installed in cabinets as they come off the pickle machine, travel through the entire sequence of operations without removal from the cabinets. They are then returned to the starting point by separate conveyor which is also used to bank the tools when not in use. Also, to minimize handling of these large parts, there is no intermediate cooling conveyor or bank between ground coat and cover coat operations. Parts are transferred directly off the ground coat furnace onto the cover coat spray conveyor. Sufficient conveyor extension is allowed to provide for cooling and inspection of the parts before they enter the cover coat spray booth.

In one of the many inspections, this mirror is used to view the top of a refrigerator cabinet which is suspended from the conveyor track in an upside down position

Inspection

All parts are subject to a process inspection subsequent to pickling and again after ground coat firing. These inspections, for the most part, are performed while the parts are in transit for cooling or on the spray conveyors previous to entering the cover coat spray booths. Special repair stations are set up to properly recondition badly damaged process parts, or parts returned from the assembly departments, before these parts are returned to the normal processing channels. Uniform operating standards are maintained by periodic adherence tests, use of weigh sheets or cylinders to adjust pick-up of enamels, and thickness tests of fired parts.

In the final inspection of finished porcelain parts, it is necessary to quickly move the accepted parts out of the department and return the rejected parts to the processing channels while at the same time exercising judgment relative to the established standards. To this end, a few of the major parts are inspected on the furnace conveyor with special facilities provided for this purpose. For example, the tops of refrigerator cabinets are inspected while suspended on the furnace conveyor with the top down, by using a large mirror. Most of the parts are removed from the furnace conveyors and placed on belt conveyors which serve as transfer conveyors between the furnaces and outgoing finished ware monorail conveyors. Inspection for finish and dimensions takes place on the belt conveyors. Exterior panels for ranges are color graded with electronic equipment after acceptance for finish and are subsequently assembled by color grade without visual color match.

All major parts are spot-checked for porcelain thickness to maintain established standards set up to minimize damage in assembly.

See plant layout . . . Pages 32 & 33

All Frigidaire products finished in porcelain are graded for degree of whiteness The instrument panel on the center machine shows whether the finish is grade 1, 2 or

Washer-ironer-dryer activity

GENERAL adoption of a trading zone method of reporting company sales is awaiting ratification at the American Washer and Ironer Manufacturers' Association annual meeting in Chicago, January 6.

Sales and advertising managers and market analysts for member companies of the AWIMA endorsed the "McCarthy" trading zone plan at a special mid-October conference in Chicago.

The McCarthy system breaks the country up into more than 600 retail trading zones, permitting a much more detailed comparison of company sales against industry totals than under the present state reporting method. The new system also permits comparison of company and industry sales against those of the electrical refrigerator and range industries which have used the McCarthy method for some time. Gas ranges, it is declared, soon may be reported in the same manner.

Luke J. McCarthy, vice president in charge of marketing, Hearst Magazines, Inc., originator of the trad-

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Left: The new Dryer Committee consists of Chairman Howell G. Evans, standing, and Edward C. Dell, left, and P. Eduard Geldhof, right.

Right: M. A. Toussaint, left, chairman of AWIMA's advertising and marketing research committee discusses the trading zone plan with Luke J. McCarthy, vice president in charge of marketing, Hearst Magazines, Inc.

Attending the AWIMA conference were: Seated, left to right: M. A. Aasgaard (Young), W. H. Reeve (Easy), G. A. Beise (Hotpoint), L. I. Sweetland (Hotpoint), Luke McCarthy (Hearst Magazines), M. A. Toussaint (Barlow & Seelig), J. A. Drake (Norge), R. E. Weiss (Easy), I. N. Merritt (Conlon-Moore), and A. H. Noelke (AWIMA). Standing, left to right: L. G. Hertzler (G.E.), Jos. Groshans (Barlow & Seelig), R. W. Sierk (Ironrite), C. A. Brewer (G.E.), Wm. Alkire (Ironrite), P. B. Thompson (International Harvester), A. Rebensburg (International G.E.), G. Thompson (Hotpoint), T. R. Buttrick (Jacobs), G. T. Harrison (Apex), R. C. Upton (1900), J. C. Frantz (Apex), L. W. Howard (1900), A. Cascino (Bendix), W. J. Dickinson (Automatic), F. W. McGrath (Appliance), E. F. Voss (Voss), J. W. Ward (Dexter), J. T. Bunch (Easy), W. F. Linville (Bendix), J. W. Christensen (Hamilton), W. V. Brumbaugh (AWIMA), J. S. Morris (Barlow & Seelig), and Roy Andree (Conlon-Moore).

Selling porcelain enamel to the architect

meeting the architect's standards on plasticity, color, performance, cleanability, and price

By Roger Allen • A. I. A.

IN selling to the architect, the primary requirement is the same as for teaching a dog tricks. In order to teach a dog tricks, you have to know more than the dog. In order to sell Porcelain Enameled products to the architect, you have to know more about them than the architect does. This is possible.

An architect today is not a dreamy character who makes a beautiful water color rendering of a building and then sits back and lets somebody else do the heavy lifting, as far as getting the building actually built is concerned. Practicing architecture nowadays is a job for a co-ordinator, an administrator, and a building operations technician. And the hardest part of the job is obtaining the coordination without which no building project of any size can be completed.

The number of materials and processes that go into construction of a modern building is so great and frequently so complex that no architect, however gifted, is able to be an expert on each of them. And it is not necessary for him to be an expert, if he knows where to locate an expert when he needs him.

The supplier and the supplier's representative should be those experts. Selling a building product today is no job for the old-time order taker with a handful of free cigars and the latest slightly blue story. The salesman has to have an accurate and complete knowledge of what he is selling and what it will do, and equally important, what it will not do. I wish I could say that today all salesmen calling on the architect answered that description, but I am afraid that I cannot.

Two types of salesmen

There are, in my experience, two types of salemen. One type comes into my office, smiles brightly and inquires, "Anything in my line today?" Inasmuch as the architect addressed has no idea whatever who the salesman is or what line he represents, the answer is likely to be vague and evasive. When the architect is as unfortunate as I am, and has great difficulty in remembering the names of people he sees every day, there is a big chance that he will not recall a salesman that he saw for five minutes some six months previously while he was thinking about something else.

The other type of salesman has taken the elementary precaution of finding out what type of work is ordinarily done by the architect on whom he is calling, and if possible, some specific job on which his product would fit. There are three rules that, if followed by the salesman, will endear him to the architect. Be bright. Be brief. Be gone.

He will be bright if he has every detail of the manufacture and installation of his product at his fingertips; he will be as brief as possible out of consideration for a man who, if he is good enough to be in a position to use your product at all, is invariably pressed for time, and if after telling his story he leaves while his welcome is still untarnished, he will be even more welcome on his return trip.

But all these are the ABC's of salesmanship and I assume that you would like to read instead what points should be stressed in your talks with the architect. I can, of course, speak only for myself, but I believe that every good architect judges the materials and the processes that he specifies on three specific points. Those points might be called *plasticity*, *performance* and *price*.

Plasticity

Nowadays when we hear the word "plastic" we almost automatically think of one of the synthetic resin products, but plastic has an older meaning, and so has its derivative, "plasticity."

Plasticity means, literally, "the ability to retain a shape attained by pressure deformation." The plasticity of porcelain enameled iron, in practice, means that during fabrication it can be bent, curved, or corrugated, as less plastic materials cannot be bent, curved, or corrugated.

A material with a high degree of plasticity means to the architect this very important thing—the material can adapt itself to the design. If the material has a low degree of plasticity, the design must be adapted to the material.

It is a matter of importance to the architect to make a material conform to his design rather than to have to make his design conform to the material. It might not be stretching a point to say that when the material dictates the design, we have an example of what the eminent historian, Professor Arnold J. Toynbee, calls in another connection, "the tendency for the potter to become the slave to his clay."

In the case of structural glass facing or face brick, terra cotta or burnt clay products, the amount of plasticity inherent in the material is very low. As a consequence, the size and shape of the material dictates the

HEDRICH-BLESSING PHOTO COURTESY PORCELAIN PRODUCTS CO.

A specialty shop is one devoted to the sale of one particular product or one distinct service as distinguished from a department store.

design to a large extent. No such limitations are present in the case of porcelain enameled iron.

To take a practical example of the value of plasticity, compare the theatre marquee of 25 years ago with the marquee of today. I have had occasion to take down a good many such marquees and replace them with modern marquees. All the older marquees had one thing in common, the design was either a combination of straight line, or it curved. The result was a general appearance of having been designed by a tinsmith of the General Grant era. The sleek, streamlined present day marquee of porcelain enamel was impossible in any material not priced out of the range of permissible expenditure, and the colors now obtainable were absolutely beyond reach in any material then in use.

The importance of color

The matter of color is one of the most important things you have to offer in your product.

The variety of both color and texture that it is possible to attain in porcelain enamel is almost limitless and the eye appeal thus obtained is one of the strongest selling points of your product. However, it is also one of the points that you have always stressed most strongly in your sales approach, and it probably is unnecessary for me to tell you what you already know—that color has taken on a new importance in the architecture of today.

Recently, I attended a seminar conducted by the Great Lakes District of the American Institute of Architects, in Dayton, Ohio, and I heard Morris Ketchum, Jr., of the firm of Ketchum, Gina & Sharp, New York architects, speak on "Designing the Specialty Shop." Ketchum's firm is among the leaders of the profession on the designing of specialty shops, and, incidentally, do not get the idea that a specialty shop is necessarily a small project. As a matter of fact, a specialty shop is a shop devoted to the sale of one particular product or one distinct service as distinguished from a department store. Some of these specialty shops can be very large. Ketchum showed us some designs for a Super Market to be built in numerous cities from coast to coast, and they were extremely large buildings. I was very much interested in his frequent reference to Porcelain Enamel in the design of specialty shops. Although he put it in other words, the feature of your product which most appealed to Ketchum was, I think, what I have been referring to as "plasticity."

Performance and cleanability

The architect assumes that every product that he specifies will meet certain requirements. It must be long-lived; the maintenance cost must be as low as possible; the appearance must not deteriorate with age, and the material must be structurally safe.

Your material is, of course, long-lived. But do not make the mistake of telling any intelligent architect that there is *no* maintenance cost on your material. There is a maintenance cost on almost any material that you can mention. Any material that has joints has maintenance requirements. The point is, in the case of your product, that a piece of enameled iron four feet by four feet has exactly 16 feet of joint to maintain, *but* it will replace approximately 104 face brick with a total joint length of 140 feet.

The appearance of your product not only should not deteriorate with age, but it has the desirable feature that certain other facing materials do not possess—it can readily be cleaned. So, of course, can struc-

tural glass, but brick and terra cotta can be cleaned only by an expensive steaming or sand blasting process. Cleanability is a Number One advantage in certain types of fronts under big city conditions.

The material must be structurally safe. One advantage of your product that I think you fail to stress quite as strongly as you might is the fact that it is possible to obtain a positive anchorage to the backing, if properly designed and installed. I have never been too happy over the fact that certain facing materials are merely pasted to the backing with an adhesive that may or may not continue to adhere indefinitely. I do not mean that this material cannot be supported on relieving angles of metal, but in the great majority of cases the principal reliance is on the adhesive.

The question of price

Recently, I spoke to an audience of doctors, dentists and druggists. I told them that an architect had a fellow feeling for all three of these professions. The architect sympathizes with the druggist because not so long ago architecture was a drug on the market. The architect knows the doctor's problem because today it is a major operation to get a new building project completed. The architect appreciates the problems of the dentist because nowadays for an achitect to get bricklayers to do a full day's work is just like pulling teeth.

One of the large projects on which we are the architects for the state of Michigan is a 250-bed dormitory at a State Normal College to which there is connected a restaurant building to feed 600 girl students. The complete project was originally estimated to cost $950,000 without the kitchen equipment, but it is probable that it will cost $150,000 more.

There are 600,000 face brick to be laid on this project, and to lay these brick we have a total of six bricklayers. As a matter of fact, we do not have six bricklayers. We have three journeymen bricklayers, two improvers and one apprentice.

I was complaining somewhat bitterly about this to the agent of the bricklayers union, and he said to me rather soothingly, "Well, Mr. Allen, you will have to admit that the six men you have are doing good work. Yesterday, they laid about 2100 face brick and this is about the union average."

I said to this business agent, "Did you ever lay brick?" He replied, "Why, yes, I was a journeyman bricklayer for many years but I haven't laid any brick in 18 years." "How many brick did you lay the last day you worked?", I inquired. He looked at me a moment and then laughed. "I know what you are getting at," he said, "and I have to admit that I could lay 800 brick a day without killing myself when I was in my prime."

The point of the conversation is that when this bricklayer was laying 800 brick a day he was being paid $10.00 a day for an 8-hour day. Today, bricklayers are getting in Michigan $18.00 per day for an 8-hour day, and laying not to exceed 350 brick on the average. This means that it now costs us about 12½¢ to 15¢ each to buy one brick and get it in the wall. Since there are approximately 6½ brick to a square foot of wall area, it means that the price per square foot of the brick face of a building is between 90¢ and $1.00 and when the price of brick facing rises to $1.00 a square foot, then *your* product, porcelain enameled iron, becomes very competitive in that price field.

I know that it is a little old fashioned to worry about the price of building nowadays as building money seems to be the only thing of which there is no scarcity, but I have been in the construction business since 1910 and if there is one thing that I have learned during that time it

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The concave fluted design of this exterior demonstrates the plasticity of porcelain enamel. Its permanency is shown by the fact that the building looks like new after 10 years of service.

PHOTO COURTESY THE MAUL MACOTTA CORP.

Industrial employee training

survey of the scope which industrial training can embrace, and a review of basic steps which must be applied in establishing organized training

By Edward P. Arter • CURTISS-WRIGHT CORPORATION

THE subject is organized under three main headings—Why Have Training in Industry?; What is Meant by Training?; How Can Organized Training be Applied?

The volume of material will not permit a complete study of this topic here. We will be able only to develop some idea of the scope which industrial training can embrace and to review the basic steps which must be applied in establishing organized training.

This can best be shown through a series of breakdowns set up under the following headings, beginning with the major consideration of selecting the areas in which to train through the progressive steps of organizing training to the details of making such training effective.

I. Scope of Training Activities
  A. Developing a Training Program
    1. Training and Educational Methods
      a. Training and Educational Devices

Scope of training activities

Following are listed nine areas of training activities. It has been found that within each of these areas a fairly standard pattern of analysis, preparation and administration can be established.

1. *Management Training* (Includes training of all supervision, department heads and executives.)
2. *Direct Production* (Manufacturing departments; i.e., press, assembly, etc.)
3. *Indirect Production* (Service departments; i.e., quality, parts control, etc.)
4. *Apprentice Training* (For trade skills.)
5. *Sales and Customer Service Training*
6. *Safety Training* (For both supervision and employees.)
7. *Induction or Pre-employment Training*
8. *Supplementary Training* (Outside working hours for employees self-improvement.)
9. *Special Training* (To meet unusual conditions; i.e., new products, new equipment, new policies or procedures.)

While it is not supposed that any company will establish all of these types at one time, still in setting up one or two, they should be aware of the existence of the others.

Developing a training program

After deciding from production records, efficiency records, industrial relations problems, etc., in which area to establish training, the next task is to develop a training program. In general, the following ten steps shown will be applied in developing a training program in any one of the nine areas.

1. *Classify the jobs involved.* This entails a study of the problems which it is felt that training will help. The jobs around which these problems center are considered and the most critical selected as a basis for training. An effort should be made to find as many elements as possible (basic skills, knowledge, difficulties, etc.) which are common to all of the jobs.
2. *Outline background knowledge.* As said before, certain knowledge is necessary in doing each job. Therefore, the items of knowledge which are to be taught should be outlined.
3. *Develop skill breakdowns.* It has been said that the individual must be able to *do* certain skills. Consequently, it is necessary to isolate these skills and prepare breakdowns for their instruction.
4. *Prepare written programs.* On the basis of this information a written program should be prepared, outlining study units, allotting approximate time, and arranging the sequence of topics.
5. *Determine method and training location.* Next, it is necessary to determine what methods of training are to be used and where the training is to be done. There are a number of alternatives from which to choose, depending upon the type of training. These will be discussed later.
6. *Review plan with key supervision.* Since these men will play a vital part in making the training effective and successful, it is important that they be given an opportunity to review the plan and offer suggestions for improvement.
7. *Present the plan to top management.* Since top management must pay the bill, the plan should be presented to them with an explanation of the anticipated benefits, the method of accomplishment and the approximate costs.
8. *Train instruction personnel.* The quality of the instruction can make or break the program. Therefore, it is important that instructors be carefully selected and thoroughly trained not only in the subject matter but also in the skill of instruction.
9. *Outline basis of trainee selection.* Some basis for the selection of trainees must be established. The basis should contain assurance that the training will be applicable to their immediate jobs, that it will not be a repetition for them, that there will be jobs available for the number receiving the training, etc.
10. *Develop evaluation and follow-up plan.* It is wise from the outset to establish some means of comparison to determine how well this training program is doing the job it set out to accomplish. This may be in the form of production records, scrap reports, cost reports, or graphs of individual performance.

After completion of the initial training, a follow-up plan should be exercised to refresh and fix the training in the worker's mind so that it becomes a part of his normal habit pattern.

Training and educational methods

The next consideration in this analysis for setting up a training program is a further development of item number 5, "Method of training." Following are eight different methods of training. The type of content and the number of persons to be trained will determine which plan is to be used.

1. *On the job plan.* With this plan trainees are taught as they work. Instruction is given by either the supervisor or by a special departmental instructor.
2. *Job rotational plan.* Here the trainee works for a short period of time on a number of different jobs to gain all around job experience.
3. *The vestibule plan.* In this plan, the training is done off the job in an especially equipped laboratory containing mock-ups or actual machines and equipment similar to that which will be used on the job.
4. *The conference plan.* Conferences are used largely in supervision training and are based on the principal of collective thinking on a common problem. One of the major benefits of this type training is in its contribution to the growth of the individual by providing him with an opportunity to express his views in an open meeting.
5. *The counselling plan.* Used where the number of trainees is limited and where

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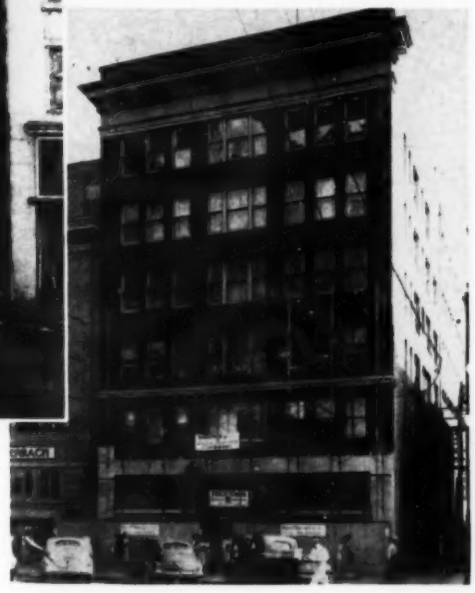
New faces for old

with architectural porcelain enamel

In remodeling the Keith O'Brien store, Salt Lake City, Utah, the beauty and utility of a new building were obtained at "a minimum of expense and inconvenience to the business."



WE have the most modern looking building in Salt Lake City," is the way W. P. Dunn, president of Keith O'Brien, Inc., feels about the 56 East Broadway department store whose front was remodeled with architectural porcelain enamel.

The "face lifting" job was part of the building's complete interior and exterior renovation for which planning was begun early in 1940. However, the outbreak of World War II halted all building work.

In 1945, modernization was begun anew, and progressed floor by floor until the remodeling was completed in 1946. With its front faced with architectural porcelain enamel. Keith O'Brien, Inc. took on the appearance of a new building.

The store front was designed by Kurt Helmstaedter, with structural engineering by Perce Young Building Construction. The supplier of architectural porcelain enamel was the Wolverine Porcelain Enameling Co., Detroit, Michigan.

Refering to the installation in a letter to *finish*, Percival Young, of Perce Young Building Construction, had this to say:

"Concerning the porcelain enamel front which we installed for the Keith O'Brien department store, Salt Lake City, we believe it is an outstanding product for this location.

"Our reasons for this belief are as follows: (1) It is competitive in price with terra cotta, structural glass, marble or architectural stone. (2) The time required for installation on porcelain enamel is very much less than on any other facing materials. (3) The light weight of this product makes it very desirable for refacing the numerous buildings which were built prior to rigid City codes, and which it would be hazardous to attach heavy masonry materials. (4) We are located on a very active earthquake zone and we believe that when a serious shock

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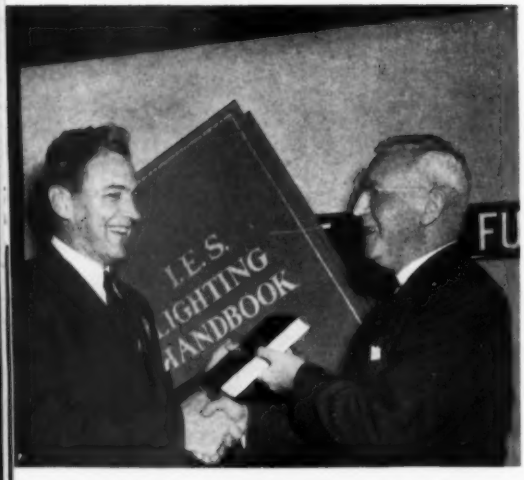
Above: Benjamin Electric's C. O. Martin, Ray Corwin and Frank Callahan.

Below: R. W. Staud, right, president of IES, presents William C. Johnson, president of NEMA, with a new "IES Lighting Handbook."

Above: Crouse-Hinds' A. H. Clarke and W. J. Byers examine their explosion proof fixture.

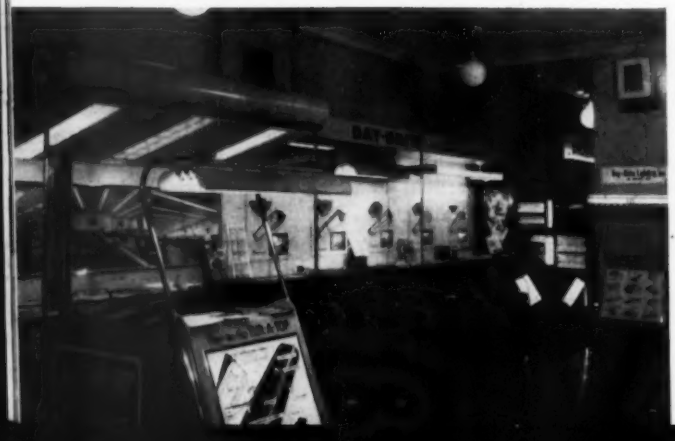
Below: Quadrangle's Alfred Zawilla, George Arras and Leo P. O'Brien inspect one of their firm's newest products.



Above: Carl W. Zersen, left, chairman of the board of judges, presents Gold Seal Merit Awards to winners.

Lower right: A view of Sylvania Electric Products' spacious exhibit.

Lower left: Day-Brite Lighting had one of the more attractive display booths.



Second international

lighting exposition and conference

MORE than 8,500 persons learned the answer to "What is new in post-war lighting?" at the 2nd International Lighting Exposition and Conference held in Chicago at the Stevens Hotel, November 3-7.

The electrical industry's "Planned Lighting" program was promoted extensively by 96 exhibitors who filled the large exhibition hall with the latest lighting equipment and accessories.

Invitation to attend the show was limited to architects, electrical contractors, wholesalers, industrial executives, illumination engineers, school men, public officials, utility personnel and other industrial and commercial officials concerned with lighting. The general public was excluded for practical reasons.

Explosion proof fluorescent fixtures, instant lighting cold cathode low voltage lamps, and louvered ceilings suspended below lamps were a few of the many attention-drawing exhibits.

Very noticeable at the show was a trend toward recessed lighting wherever new construction or remodeling permits, with the most practical arrangements combining air conditioning outlet units with lighting source units.

New IES handbook

Keynote of the show was the first exhibition of the new "IES Lighting Handbook," published by the Illuminating Engineering Society. The knowledge accumulated in the lighting industry for the past four decades was evaluated and interpreted with respect to today's needs to provide the most complete coverage of the field possible within the confines of a practical sized book. More than 6,000 orders were placed for the 850-page book before it was off the press, said one Society member.

Coinciding with the exposition was the 50th anniversary of Curtis Lighting, Inc. To commemorate the occasion, the manufacturer displayed the Curtis Collection of Ancient Light Sources which was started many years ago by A. D. Curtis, founder of the firm. The collection features the oldest device used as a primitive lamp, which was made by hollowing out a stone to burn the fat of animals slain by the cave dwellers of 80,000 years ago.

The Exposition Operating Committee announced that plans are being laid for the 3rd International Lighting Exposition and Conference, with the tentative opening date set as March 28, 1949.

Members of the committee were: Chairman E. C. Huerkamp, Westinghouse Electric Corp.; Vice Chairman R. W. Staud, Benjamin Electric Co.; D. M. Biller, Day-Brite Lighting, Inc.; H. E. Ingraham, Holdenline Co.; W. P. Lowell, Sylvania Electric; S. R. Naysmith, The Miller Company; A. A. Overbagh, Overbagh & Ayres Mfg. Co.; F. I. Wilson, The F. W. Wakefield Brass Co.; F. J. Martin, NEMA staff.

Regarding the new developments in lighting, William C. Johnson, Allis Chalmers Manufacturing Company, new president of the National Electrical Manufacturers Association, said "This Exposition of the latest developments in lighting equipment for Industry and Commerce is an event of outstanding importance to every man, woman and child in America, for the benefits of these advancements in the lighting of factories, stores and offices, streets, airports and recreation fields will be eventually felt by every American in every walk of life. Here on display are the tools whereby the Lighting Industry can better plan lighting that will make life happier, healthier, and more productive for all."

Helping to run the show were, left to right, R. W. Staud, chairman of attendance promotion committee; S. R. Naysmith, chairman of exposition; William Johnson, president of NEMA; E. C. Huerkamp, chairman of operating committee; W. P. Lowell, Jr., conferences committee member, and W. J. Donald, managing director of NEMA.

Merit award competition

Announcement of winners of Gold

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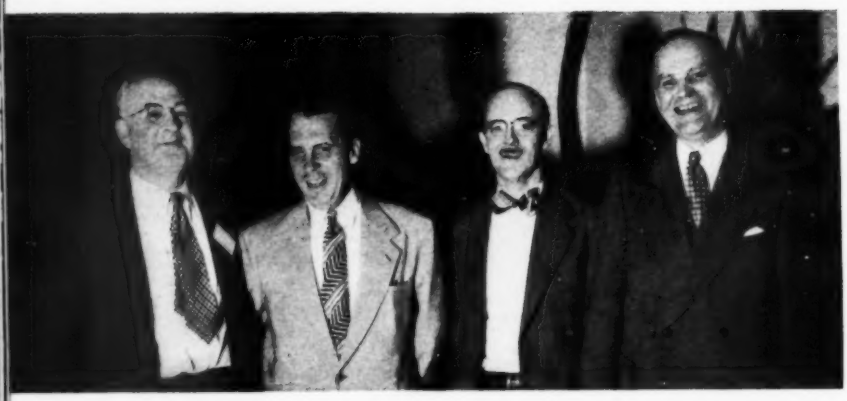


Left: The "Four Freds" are Weaver, Tappan Stove; McGee, Manufacturers Agent; Parker, Phillips & Buttorff; Manss, Andes Range.

Below: Cutler-Hammer's M. R. Brice and Fred A. Wright enjoy the entertainment.

FROM JUNE ICHAM MEETING

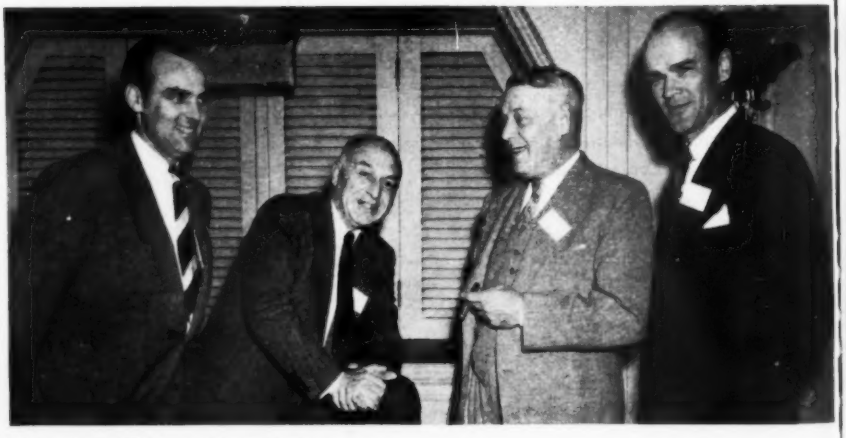
finishfotos

As *finish* readers see these photos, stove men will be leaving for their December meeting in Cincinnati.

Above: G. F. Henry, Geo. Henry Co., and W. H. Hohmeyer, Detroit Lub., enjoy dinner.

Right: Tennessee Enamel's F. D. Hart and R. N. Smith, flank Chicago Vit's Lew Adams and Bill Hogenson.

Below: Carl Lyon, Monroe Stove, and Frank Post, Robertshaw-Fulton, pose for snapshot.



Right: A. K. Walton, Newark Stove, and Sam Dunckel, ICHAM, were deep in thought.

Right below: E. L. Merrill, Monroe Stove, and T. W. Sanders, Dearborn Stove, engage in separate diversions.

Left below: Cribben & Sexton's W. C. Davis and H. E. Jalass converse with ICHAM President M. F. Cotes, right, Duo-Therm.

The Washington round-up

By Wilfrid Redmond

THE Harriman Committee, appointed by the President last June to study the problem of our economic assistance to foreign countries, has turned in a report which recommends:

"The appropriate agencies should recommend to the President at once partial restoration of those limited war powers which they believe to be necessary in order to carry out an economic assistance program with minimum adverse effects upon the domestic economy. At the same time each agency should also start to work out the details of the specific administration controls for which they request authority."

The Harriman report is the third of three studies of the requirements of the proposed Marshall program and of our resources for meeting these export demands. The other two reports, by Secretary of the Interior Krug, and by Edward Nourse, of the President's Council of Economic Advisers, dealt with various phases of the problem. They will be used by the President and by Congress in estimating the legislation that will be required to set the Marshall Plan in motion for the recovery of the Western European nations.

The President's Committee on Foreign Aid, of which W. Averell Harriman, Secretary of Commerce, is chairman, is composed of leaders of American business, labor, agriculture, educational and research institutions. This group went further than the other two committees in estimating how much we should give and what we will have to do at home in order to meet our commitments.

The Committee recommends:

"It is imperative that the authority for export controls be continued as long as any substantial economic assistance is being extended to foreign countries. It is equally imperative that sufficient appropriations be made to permit expansion and improvement of export controls so that they can be used to allocate supplies of all critical items more effectively among competing claimants."

The President's advisers also urged that measures be taken to reduce domestic demand in order to make available for export goods that are in short supply. The Committee recommends that these measures be voluntary wherever they are effective.

"If and where they are not," the report says, "the Government will probably require the authority to set priorities for the purpose of insuring the availability for export of limited amounts of the most critically needed items. It might also have to issue limited conservation orders, to control the consumption of critical materials, such as those still in effect for tin."

The Harriman Committee refused to state the type of control powers that should be established. The group also veered away from any consideration of the problem of inflation although stating its conviction that inflation is a serious threat to the stability of the American economy.

The question of steel exports

It is the Committee's view that finished and limited quantities of semi-finished steel products can be supplied for the rebuilding of Europe without serious effects upon our economy.

Of a total bill of requirements from the U. S. estimated at $1,950,000,000 of steel, the report of the 16 Marshall plan nations asked for 2,244,000 net tons of semi-finished steel in 1948.

The Committee recommended that no substantial quantity of semi-finished steel be exported. At the current rate, 574,000 tons of semi-finished steel will be exported during 1947, 396,000 tons going to the participating countries. No substantially larger tonnage should be exported at present, the Committee recommended.

The amount asked by the participating countries in 1948 is 40 percent of the amount of semi-finished steel now being furnished the non-integrated producers in the United States by the integrated mills. Further reduction of semi-finished steel shipments to the non-integrated mills in this country will serve to aggravate an already very serious shortage in the needs of those producers of finished steel.

It was pointed out that the bulk of the semi-finished steel requirement is requested by the United Kingdom. The United Kingdom expects to export approximately the same quantity of finished steel in order to reduce its balance of trade deficit.

Scrap supply too tight for export

The participating nations also asked for 1,500,000 tons of scrap from the U. S. in 1948. The Harriman Committee reported that scrap cannot be safely exported at this time.

It is not expected that the price of steel will be greatly affected by foreign requirements. Additional allocations would presumably be met from two principal sources: (1) shifts from other export markets to Europe, and (2) increased production in the United States. The overall demand and supply situation, the report states, would thus not be greatly different from what it is at present.

Report on raw materials

Of the metals an dtheir products which are used in the manufacture of enamels and enameled products the Harriman Committee reports the following:

Antimony. — "The limited nature of the domestic reserves of antimony and the substantial dependence upon foreign sources to meet domestic requirements makes the exportation of antimony metal under a foreign aid program inadvisable. It is believed, however, that the type of products containing antimony which may be required for the foreign rehabilitation program will not be of suffici-

ent magnitude to significantly reduce the antimony supply available for the manufacture of antimony products for domestic consumption."

Lead. — "Currently the deficit between production and consumption is being met from stocks and imports. When stocks reach their irreducible minimum *(before the end of 1947)* the situation will be critical because foreign supplies, in the face of heavy and increasing demands from other parts of the world, will not be adequate to meet the entire shortage. *Consequently, it is clear that consumption will be curtailed, either by economic forces or by domestic or international Governmental controls.* Any rehabilitation program placing heavy drains on lead supplies would further reduce the ability of American industry to meet domestic consumer and present export demands for end products. Such drains, however, could not conceivably be great enough to deplete seriously the domestic lead ore reserves."

Tin. — "Wartime controls now extended to March, 1948, ration all available supply including the small government-owned stocks and all current imports. Any program requiring tin will have to accommodate itself to this current supply situation but no stringency is foreseen after about 1950."

Titanium. — "The United States can furnish an adequate supply of ilmenite to domestic titanium dioxide manufacturers, chief consumers of ilmenite for at least 6 years, without a serious drain on reserves but unless there is pressure toward this end, it is likely that substantial quantities of high-grade concentrates will continue to be imported . . . . . Exported world requirements for the next 6 years can be supplied readily from known world reserves."

Zinc. — "The current domestic mechanical and manpower facilities for the production of zinc and zinc-base alloy manufactures are believed to be more than ample to maintain present or anticipated increases in export demands from the United States for foreign reconstruction during 1947-1952, without substantial encroachment on our domestic economy."

Soda Ash. — "No great difficulties because exports are small. Raw materials are plentiful but about 15 percent of domestic demand remains unsatisfied. Backlog of orders increasing for alkalis. Industry rationing and drying up of black market leakages would provide additional supplies for Western Europe. Increase in European coal production must be achieved."

The question of program administration

The President's Committee recommended that an independent agency be established to administer the foreign aid program. It would be similar to the Office of War Mobilization and Reconversion with overall policy making, but with controls administered by the agencies now dealing with the commodities in question.

Congress also has an administrative program which will have to be compromised with the Harriman recommendation.

Members of Congress so far sounded out, are opposed to price control although many leaders in the House and Senate have stated they will support allocation measures to back up the foreign aid program.

In the first report to Congress required under the Second Decontrol Act of 1948, the Office of Materials Distribution of the Department of Commerce recommended that controls on tin be extended beyond March 1, 1948, and that controls on antimony be extended for another quarter. It was also recommended that export controls be extended beyond the present expiration date. The report stated that limitation of tinplate for beer and coffee cans and some other non-food uses is under consideration.

"Well anyway, ya gotta admit we got a whoppin' big price for our house and car!"

From the Editor's mail . . .

Georgia School of Technology, Atlanta, Georgia
(Research)

"Please continue to send copies of Finish to this college. We are very glad to receive them as each year they are bound and placed in our library. Thank you."

Lane Mitchell,
Head of Dept. of Ceramic Engineering

Moore Enameling & Mfg. Co.,
West Lafayette, Ohio
(Kitchenware)

"Your articles plus entire contexts of Finish are most interesting. I look forward to its arrival each month."

Frank W. Owens, Enameling Superintendent

Payne-Mahoney, Inc., Oakland, California
(Jobbing, signs)

"We have liked your publication from its inception and feel that it has been improving continually."

Denis Mahoney, President and Manager

Lansdale Porcelain Enamel Corp., Lansdale, Pa.
(Jobbing)

"I wish to express my appreciation to the publisher's of Finish for the publication which everyone in the porcelain enameling field enjoys reading."

Edward W. Adams, Night Supervisor

Clyde Porcelain Steel Corp., Clyde, Ohio
(Jobbing)

"Your magazine fills a long felt need. Articles are very interesting and help all to keep in touch with important changes and ideas."

W. E. Punsky, Manager of Quality Control

Porcelain Enamel Specialties Co.,
Baltimore, Md.
(Architectural)

"Congratulations! FINISH is unquestionably the most outstanding publication of its kind, in or out of the porcelain enameling industry. The editor and staff of FINISH have made a major contribution to the advancement of the industry."

Howard Michel, Owner

O'Keefe & Merritt Company, Los Angeles, Cal.
(Ranges)

"Very fine magazine. Keep up the good work."

Richard Carne,
Enamel Department Superintendent

The Porcel Company, St. Louis, Missouri
(Architectural)

"Our natural tendency is to prefer articles concerning the building industry.

"However, you have a fine publication. We find each and every one very interesting."

Lester W. Hazekamp, President — Chief Engineer

The Howell Company, St. Charles, Illinois
(Metal Furniture)

"Enjoy receiving your magazine FINISH as it contains a great deal of valuable and useful information."

Bert H. Grieshach, Plant Engineer

Silent Glow Oil Burner Corporation,
Hartford, Conn.
(Oil Burners)

"FINISH is, in my opinion, the best porcelain enameling trade paper published, possibly because you have no company axes to grind."

Norman F. Heym, Manager, Range Burner Division

Seeger Refrigerator Company, St. Paul, Minnesota
(Refrigerators)

"The magazine FINISH is the best periodical for a specific industry that I have ever found. Keep up the good work."

Paul F. McCloskey,
Superintendent of Enamel Shop

The Northwest Chemical Company,
Detroit, Michigan
(Metal Cleaners)

"I get a lot of reading and knowledge out of FINISH. I carry the current issue in my briefcase and hardly a day goes by that I do not use it in some way."

J. H. Rhoades, Sales Engineer

The Warren Company, Atlanta, Georgia
(Commercial refrigerators)

"I like FINISH very much. I always look forward to seeing it."

E. B. Flowers, Ceramic & Chemical Engineer

Altorfer Brothers Company, Peoria, Illinois
(Washers)

"Your FINISH is OK. Have obtained a number of good ideas from articles."

S. J. Callahan, Purchasing Agent

Morley Manufacturing Company,
Mascoutah, Illinois
(Ranges)

"Enjoy reading your magazine which helps to keep me posted."

G. S. Morley, President

Lloyd Associated, Inc., Philadelphia, Pa.
(Architectural)

"We have found your publication to be of great value in many respects, and it is one of the best trade publications on our list. Many thanks."

Robert A. C. Gilfillan, Vice President

Ferro Enameling Company, Oakland, California
(Jobbing)

"You are doing a good job."

Hugh F. MacIntyre, Partner

Cameron Stove Manufacturing Corp.,
Richmond, Va.
(Stoves)

"I look forward to each issue of your most informative magazine."

Walter M. Jones, Jr., Assistant to Manager

Geneva Modern Kitchens, Inc., Geneva, Illinois
(Kitchen equipment)

"We enjoy your technical magazine very much. Each month it is passed from office to office so that everyone concerned with the finish on our products may read your interesting articles."

Norman H. Lea, Advertising Manager

Columbus Porcelain Metals Corporation,
Columbus, Ohio
(Jobbing)

"I look forward to receiving FINISH, for it is o value as a trade magazine, and all needs through the industry, and to keep abreast of the better things to learn in enameling."

Gordon W. Lasiter,
President and General Manager

B. F. Drakenfeld & Company, Inc.,
Washington, Pa.
(Color oxides)

"FINISH is a must on my reading list each month. It has such a frank and fair approach to our problems today and holds one's interest from cover to cover."

Anthony Sedenka,
Manager, Inorganic Pigments Division

A. O. Smith Corporation, Kankakee, Illinois
(Hot water heaters)

"I have enjoyed the nicely balanced program of papers on management and technical articles, together with editorials."

Floyd Bailey, Production Foreman

Day & Night Manufacturing Co.,
Monrovia, California
(Spaceheaters, waterheaters)

"Technical information obtained from your articles have helped me very much with our porcelain enamel research."

Lee R. Erwin,
Refrigeration & Chemical Research Engineer

Automatic Canteen Company of America,
Chicago, Illinois
(Food canteens)

"We find your publication very helpful and see that it is passed on to various ones in our organization who handle the specifications for finishes."

W. E. Richmond,
Vice President in Charge of Engineering

National Bureau of Standards Library,
Washington, D. C.
(Research)

"Your publication is of interest to our scientific staff and is bound and kept in our library."

Sarah Ann Janes, Librarian

U. S. Government — Bureau of Ships, Navy Dept.,
Washington, D.C.
(Government)

"Your publication is circulated among 12 persons vitally interested in shipboard equipment. Also of interest has been the application of enamel coatings to pipe lines."

R. F. Cleaves, Engineer Naval Architect

Navy Department, Washington, D. C.
(Government)

"I have enjoyed Finish for several years and take each issue to the office to circulate among other technical employees."

J. G. Walsh, Senior Engineer

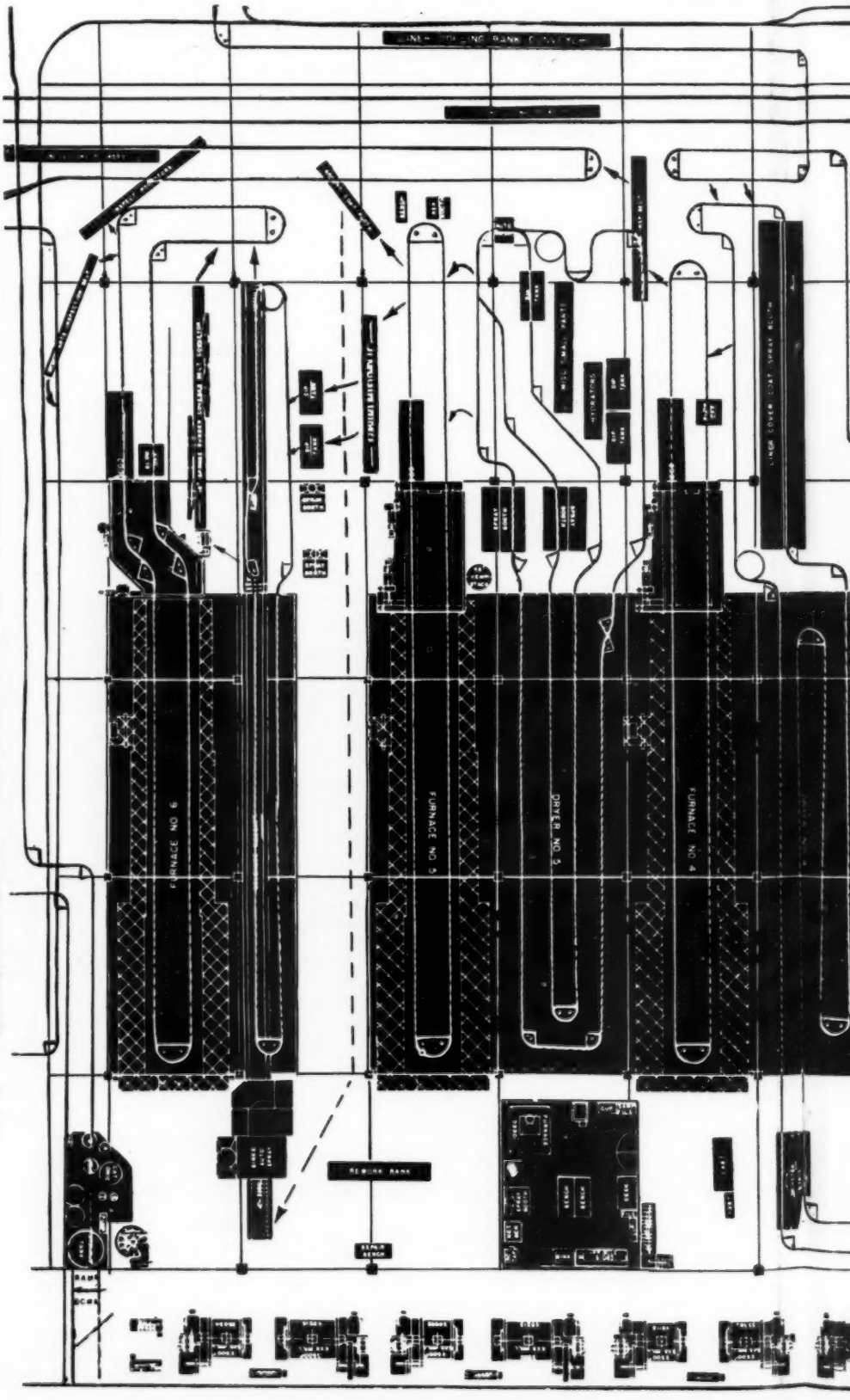
Plant Layout No. 10 . . . . .

A six continuous furnace porcelain enameling p

This layout of the world's largest porcelain enameling plant presents an interesting study for every enameling plant man. First read the story "Operating the World's Largest Porcelain Enameling Plant," which starts on page 15. Then see how successfully you can follow the production through this six continuous furnace layout.

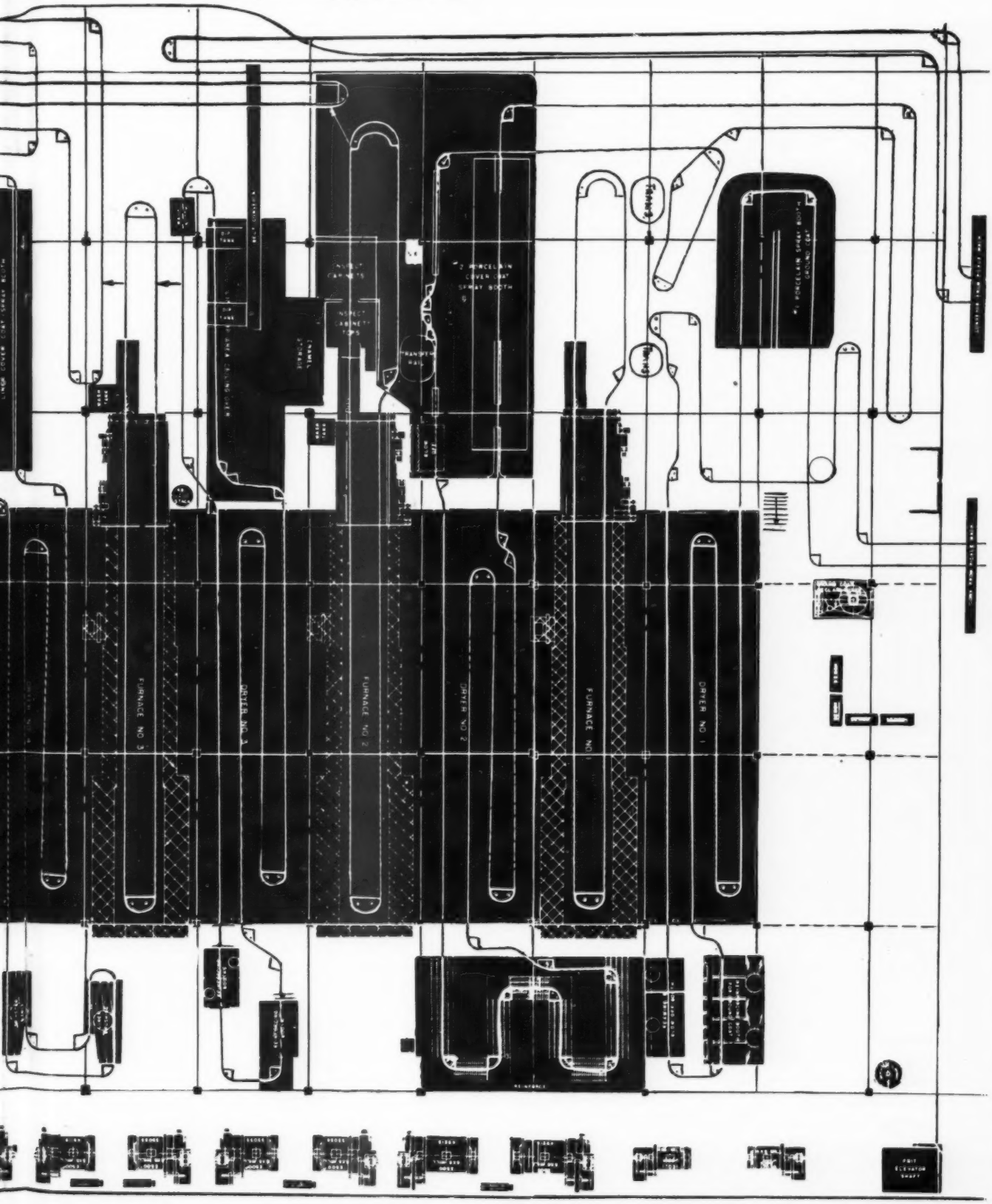
The conveyor arrangement and positioning of principal items of equipment are in themselves a study of compact arrangement. It should be remembered that while this is essentially a "straight line" production plant, porcelain enameled parts for a number of different products are included in the schedule.

Principal products consist of all-porcelain refrigerator cabinets, all-porcelain automatic washers, electric ranges, and porcelain parts for refrigerators, water coolers, and water heaters.



Acknowledgement is made to the Frigidaire Manufacturing Process Department for supplying various data and the layout diagram of the Porcelain Department.

ling plant for major appliances



Report on the activity of the porcelain enameling industry coordinating committee

THE Coordinating Committee for the porcelain enameling industry met at Campbell Hall at Ohio State University during the Porcelain Enamel Institute Forum. All clubs were represented except the Pacific Coast club.

Current members of the Committee include the following:

Eastern Enamelers Club—
R. R. Danielson
G. H. Spencer-Strong

Central Enamelers Club—
J. S. LeMunyon
R. D. Evans

Chicago Enamelers Club—
Ralph Cook
W. J. Plankenhorn (Also chairman of the Committee.

Pacific Coast Enamelers Club—
Roy Armour
Glen Fulton

Secretary—Dana Chase

Problems placed before the Committee were considered. These included proposed cooperation with Michigan enamelers in the formation of a new "Michigan Club" and possibilities for closer cooperation between existing clubs and the national organizations—the Porcelain Enamel Institute and the American Ceramic Society.

Inasmuch as the meeting was held at the time when early fall meetings of the Enamelers Clubs were scheduled, it is expected there will be additional problems presented for consideration at the next regular meeting during the 1948 American Ceramic Society convention in Chicago.

It was the opinion of the Committee that the original aims of the organization should be placed before each club again, and that the Coordinating Committee representatives urge the individual club secretaries to carry through with inter-club correspondence and reports as outlined previously. This should assist the individual clubs materially in the development of more effective programs, eliminate conflicting dates of meetings, etc.

A further suggestion was made that Coordinating Committee representatives from the clubs be appointed for two years, with staggered terms, so that one member familiar with the Committee activities would always be present at meetings with a new member.

In order that all club members and the industry as a whole may have an opportunity of reviewing the aims of the Coordinating Committee, we are reprinting the information as it appeared originally in April, 1947, *finish*.

Original aims of the Coordinating Committee

(With comments and suggestions from an earlier meeting)

1. Increase the effectiveness of the groups by coordinating the activity of the individual clubs into a more unified program.

a. It was suggested by the committee that each club put on its mailing list the chairman of the program committee and all officers of all active Enamelers Clubs. This would include notices of meetings, programs, and other information that might prove mutually helpful. Activities of the publicity committees and membership committees were discussed as being valuable to club activity.

b. It was suggested that an "explanation sheet" outlining the activity, purposes and plan of the Enamel Clubs be prepared for mailing to plant executives—this for the purpose of gaining executive interest in having plant men participate in club activity. An interchange between groups was suggested so that the resulting information would be reasonably uniform.

c. Attention was called to the advantages of advance publicity on meetings, and it was suggested that the various publicity chairmen check with all interested publications to determine closing dates and then advise program chairmen accordingly so that information would be in the hands of editors in time for advance printing.

2. Cooperate with the American Ceramic Society and the Porcelain Enamel Institute in obtaining a greater interest among plant men and club members in the program of these organizations.

a. Offer an opportunity for Pearce and Mackasek to speak at Club meetings in the interest of PEI and ACS activities.

b. Distribute any literature or bulletins of a technical or practical nature as provided by the PEI or ACS.

c. It was suggested that dates be watched carefully so there will be no conflict between club meetings and ACS division meetings.

d. Include announcements of ACS local section meetings in Club business, particularly when they pertain to enameling activity.

Note: Both Pearce and Mackasek issued invitations to the coordinating group to meet regularly at the time of the National ACS Convention and the PEI Forum. This would make two regular meetings a year for the Coordinating Committee. These would be worked into the respective programs by those in charge.

e. It was suggested by Dr. Spencer-Strong that attention be given to encouraging a Standards and Tests program.

3. Assist any group or groups interested in the possibility of organizing enamelers clubs in other districts.

a. It was agreed to send complete information similar to that furnished by the Chicago Club to the Eastern and West Coast Clubs as a guide for development of a club in the Detroit area.

b. It was decided to put out a feeler for interest in the St. Louis area.

c. The desirability of having all Clubs affiliate themselves with strong technical groups in their respective localities was indicated. (An example of such an affiliation is the Chicago Technical Societies Council in which the Chicago club holds membership.)

4. Develop a program to assist in the dissemination of available constructive information of interest to enamel plant men.

5. Extend the industry's cooperative activity throughout the entire year in addition to the usual scheduled meetings of the existing organizations.

Points 4 and 5 were covered in the discussion of previous points.

6. Provide for a continuous flow of information between the participating Enamelers Clubs.

a. It was suggested that point No. 6 should be the responsibility of the Club secretaries.

b. The PEI and ACS are interested in getting copies of all information released by the Clubs.

QUICK TRIPS TO ENAMELING PLANTS

A visit to U. S. Porcelain Enamel Corporation

By GILBERT C. CLOSE

THE other day we telephoned Al Sattler, one of the three co-owners of U. S. Porcelain Enamel Corporation, Los Angeles, and told him we would like to visit his plant, then describe it to the readers of *finish*.

Al's invitation was cordial. "Come along," he said. "You're welcomed if . . . . "

Now what? We wondered.

" . . . . if I don't have to do any of the writing!"

We quickly assured Al that the writing end of the bargain was our province entirely, and that we'd be over as soon as we could wend twenty miles of Los Angeles traffic.

Organized in 1928, U. S. Porcelain Enamel Corporation has subsequently gained stature until it is now one of the larger jobbing concerns on the West Coast. Two of its original founders, A. G. Sattler and J. L. Hodgkinson, are still with the company. The third current co-owner, Al Oesterle, assumed his father's place in the business. Prior to opening their own company, A. G. Sattler had four years of enameling experience with Smoot-Holman Co., another West Coast concern, while both J. L. Hodgkinson and the elder Oesterle had been connected with Eastern enameling firms.

Above: Illustrated are examples of a few of the many colorful designs in porcelain enamel that have been produced by the company. It would take color photography and reproduction to adequately present these samples.

Left: Al Sattler, co-owner, escorted Mr. Close on a tour of inspection of the Los Angeles concern. Sattler is vice president of the Pacific Coast Enamelers Club.

Fabrication and enameling of all types of sheet metal products

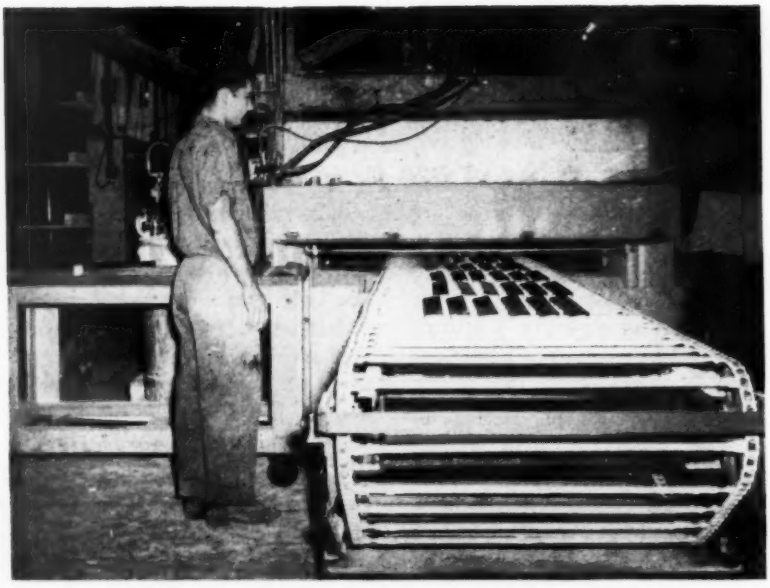
The company now employs 120 people. Production work includes fabrication and enameling of such diversified products as signs, electric range parts, lavatory soap dispensers, meat and show case panels, and architectural panels. One department is diverted to the application of baked organic enamels on unit heaters.

Though no foundry facilities are maintained, the sheet metal department is well equipped to handle all types of fabrication work along this line. Blanking and forming presses, forming rolls, large and small breaks, shears and other equipment fill one large department extending the entire width of the building. Fabrication is by spot, arc, or gas welding.

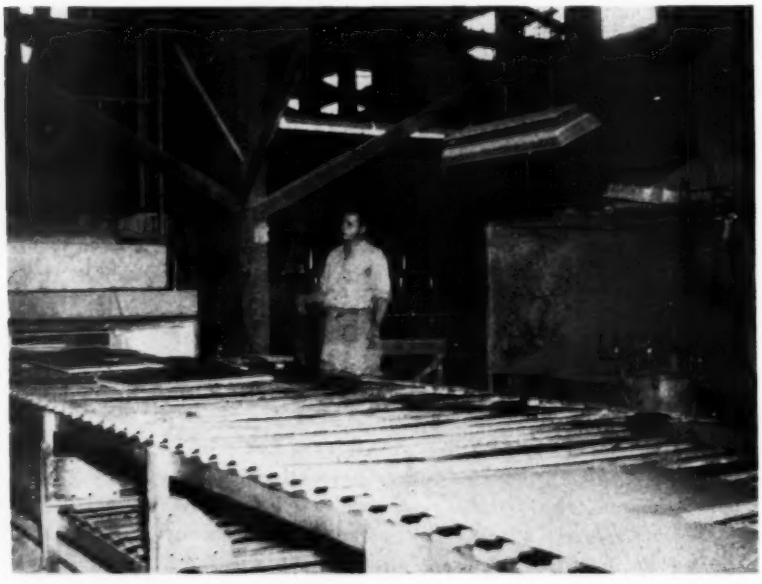
The cleaning department, adjacent to the sheet metal room, contains seven solution and one drying tank. All tanks are heated by a single "Petrofire" unit equipped to burn either gas or oil. A monorail conveyor and wire mesh baskets are used to handle the work through the various cleaning and pickling operations. As this room extends entirely through the width of the plant, large open doors on each end provide ventilation and clean air.

Seven ball mills are used for slip preparation, including a 1000-lb. mill, and two each of 600 lbs., 300 lbs., and 100 lbs. capacity. Due to the diversity in size and shape of various work, large and small spray booths and one automatic spraying unit are used in slip application. The conveyor that runs through the automatic unit (approximately 6 ft. wide) passes four hand spray booths, two on either side, before entering the drying oven, thus permitting the work from five units to be handled and dried simultaneously. Other hand spray booths for specialized work are employed.

Ground coats are dried in an oven containing three conveyor chains and drying chambers — one for double-faced work, one for suspended work,



Above: Beginning of continuous flat conveyor which transports work to automatic spray booth. Below: Conveyor emerges from automatic unit, passes four hand spray booths, through drying ovens, and to transfer point to furnace chain.



and one for flat work. The conveyors from both the ground coat and top coat drying ovens emerge in the same area adjacent to the furnace conveyor.

Eighty-two-foot continuous furnace

An 82-foot straight-through furnace is employed, including 30 ft. of preheating travel, 32 ft. for firing, and 20 ft. for cooling. Here again a unit equipped to use either gas or oil is used for heating. Temperatures are automatically controlled at two stations within the firing chamber. As the conveyor emerges from the furnace room, work is removed directly to the inspection tables and thence to storage.

Al Sattler points out that jobbing work does not readily lend itself to the automatic conveniences of a one-product production line. This is easy to note as products no larger than a dinner plate are followed on the furnace chain by large architectural panels. Equipment on the jobbing production line, and the line itself, must be sufficiently versatile to adapt it to various sizes and shapes of work with a minimum of effort.

Magnetic table used for extensive silk screen work

The company has developed a highly efficient silk screen department for use in conjunction with various types of sign work. "Silk screen designs will put life into any sign," Sattler declared. A large magnetic table is provided for holding the sheet metal during application of the designs. Stencils and screens are prepared by the company's own experts. The walls of the department are decorated with specific examples of work turned out, many of them highly artistic in nature. These include reproduced portraits, animal studies, and various scenic designs that challenge the imagination to believe they are actually enameled reproductions.

We asked Al Sattler the connection between himself and the Sattler member of Gaffers and Sattler Co., another Los Angeles enameling concern. "He's my uncle," Al explained. "When we first started business, we did their enameling work. When they installed their own enameling department, we started our present jobbing activities," Al continued.

The success of these activities is apparent to anyone entering the finished work department. Practically any common product that is known to wear an enamel coat can be seen stored in greater or lesser quantities, ready for delivery.

MORE PRODUCTION
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Next time your enamel mill needs relined use McDanel Mill Lining Brick. Extra fired for durability, McDanel Lining Brick lengthen the time between relinings, keep your mills in profitable operation over longer periods.

Just as outstanding in performance are McDanel Grinding Balls. Hand rolled to assure faster, more thorough grinding, McDanel Grinding Balls make ideal partners in your enamel production. You'll find these two McDanel products will cut costs and increase the level of efficiency in your mill operations.

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MILL LINING BRICK • DOOR LINING BLOCKS
SPECIAL MILL LINING SHAPES
MILL HEAD ASSEMBLIES
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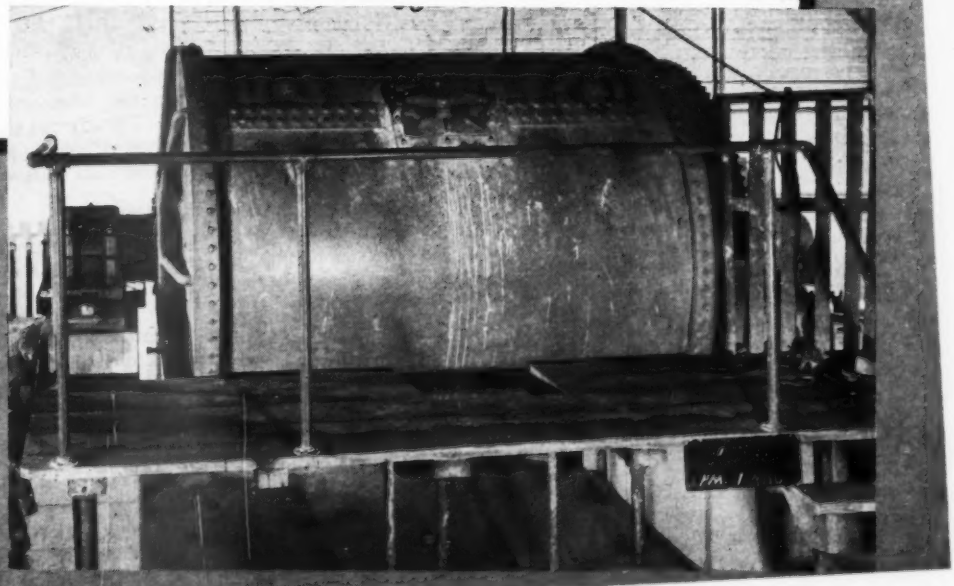

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The finest Spray Gun ever made!

BINKS
NEW MODEL 18V
SPRAY GUN
for ceramic finishes

Specifications:

Controls: Convenient back-of-gun location. Spray pattern fully adjustable from round to flat.

Body: Strong drop-forged aluminum with long-life black electrolytic coating.

Head and Air Nozzle: Tough drop-forged bronze heavily plated.

Material Nozzle: Hardened steel with Tungsten carbide insert to give long life. Self-centering. Tapered seat.

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Air Valve: Efficient cartridge type.

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"The Model 18V is another outstanding product on which we proudly put the Binks name."

J. R. Roche
President

Sets a new standard in spray finishing

There's just one way you can really appreciate the exceptional qualities of the new Binks Model 18V spray gun and that's to examine it. Take this spray gun in your hand . . . feel its perfect balance! Pull back on the smooth-operating trigger . . . note the uniform, controlled coverage! Take it apart . . . study the unequalled precision of its manufacture. Then, we are sure, you will agree with other ceramic spray finishing experts that this is the finest spray gun of them all!

And when you see how Model 18V stands up under hard, continuous production-line operation . . . handling any material . . . giving uniform, fine finishing long after most other spray guns have worn out . . . you'll know that the 18V has no equal for performance or economy!

Truly, the new Model 18V is the crowning achievement of years of engineering development in spray finishing that have made Binks spray guns and equipment the standard in America's leading industries.

write for full information and prices

Binks

MANUFACTURING COMPANY

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NEWS

Haagen gets Tappan promotion

The promotion of O. J. Haagen to district manager has been announced by D. S. Sharp, sales manager of Tappan Stove Company, Mansfield, Ohio. It was stated that Haagen will supervise the southwestern Ohio and southern Indiana district.

A graduate of Ohio State University, he was employed for 18 years by the Ohio Fuel Gas Company in the capacity of assistant manager of appliance sales and later as manager of domestic and commercial appliance sales.

Winter home furnishings market

The International Home Furnishings Market will be held in Chicago, January 5-17. Thousands of buyers are expected to flood the American Furniture Mart and the Merchandise Mart for the two-week market.

October meeting of Ohio State student branch of ACS

The Ohio State Student Branch of the American Ceramic Society held its regular meeting October 9 with approximately ninety present.

Purpose of the meeting was to permit the ceramic engineering students to become acquainted with representatives of the ceramic industries and organizations in the Columbus area.

Members of the Ceramic Engineering Department present were: Prof. Emeritus A. S. Watts, Prof. J. L. Carruthers, Prof. R. M. King and Dr. Ralston Russell, Jr.

Representing Porcelain Enameling organizations was Gordon Lassiter of Columbus Porcelain Metals, Inc.

Robertshaw heads new Robertshaw-Fulton Controls Co.

Formation of a new concern in the field of automatic controls, known as Robertshaw-Fulton Controls Co., through the merger of Robertshaw Thermostat Co., Youngwood, Pa.; Fulton Syphon Co., Knoxville, Tenn., and Bridgeport Thermostat Co., Bridgeport, Conn., was announced by John A. Robertshaw, president of the new firm.

The organization of the company culminates a series of mergers combining five long established companies, each a wholly owned subsidiary of Reynolds Metals Co. Also included in the new setup are American Thermometer Co., St. Louis, and Grayson Heat Control, Ltd., Lynwood, Calif.

The purpose of the merger is to integrate the development, manufacture and merchandising of a complete line of automatic controls for household, automotive, industrial and commercial uses, said Robertshaw.

Other officers are R. S. Reynolds, chairman; J. V. Geisler, executive vice president; T. T. Arden, executive vice president; R. S. Reynolds, Jr., financial vice president; Walter H. Steffler, secretary and treasurer, and Walter L. Rice, general counsel.

The directors include R. S. Reynolds, John A. Robertshaw, J. V. Geisler, T. T. Arden, R. S. Reynolds, Jr., C. N. Mynderse and Thomas F. Staley.

Jebens joins Patterson Foundry

Raymond H. Jebens has joined The Patterson Foundry & Machine Co., East Liverpool, Ohio, as chief chemical engineer, according to an announcement. He will be available for consultation on processing problems and will apply his experience to the development and application of Patterson equipment.

Jebens formerly was associated with the DuPont organization, and was one of the engineering group which designed the Oak Ridge, Tenn., and Hanford, Wash., plutonium plants. He received his B.S. and M.S. degrees in chemical engineering at Iowa State and has done post-graduate work at Columbia University.

Rutgers ceramic students hold fall meeting

The Rutgers Ceramic Club and Student Branch of the American Ceramic Society held its first meeting of the fall term, October 8.

Guest speaker for the affair was Henry F. Kleinfeldt, vice president, Abbe Engineering Company, New York City. Kleinfeldt, a former president of the Ceramic Association of New Jersey, discussed "The Ball Mill and Its Use." He gave a general picture of the types and uses of ball mills, and then discussed the reasons for choosing a particular size of porcelain ball for a certain size mill.

Officers of the Rutgers Ceramic Club for 1947-48 are: William E.

Brown, president; John L. Houska, vice president; George S. Huber, secretary; Fred R. Huettig, treasurer; Dr. John H. Koenig and William H. Bauer, councillors.

Algeo to Barlow & Seelig

John S. Algeo is now associated with Barlow & Seelig Manufacturing Co., Ripon, Wis., as district representative for West Virginia, Virginia and Eastern Pennsylvania.

Algeo gained his early appliance experience with Ray Glo Corporation, manufacturers of gas heating equipment. During the past war he was assistant production manager of the generator division of Jack and Heintz, Cleveland.

Moffitt advanced by U.S. Steel

Ralph C. Moffitt has been promoted to the position of assistant to vice president, purchases, according to C. A. Ilgenfritz, vice president, purchases, United States Steel Corporation of Delaware.

J. Fred Ingram heads Ing-Rich as Ernest Richardson retires from presidency

Ernest Richardson has retired from the presidency of Ingram-Richardson Manufacturing Co., Beaver Falls, Pa., the company has announced. Richardson is a co-founder of the firm, and since 1901 has been a directing head. He served continuously as director and treasurer from the firm's beginning and as president from 1942. Richardson will continue as vice president and director of the company's associate plant in Frankfort, Indiana.

J. Fred Ingram, new president, is the son of the late Louis Ingram, co-founder with Ernest Richardson. The new president began with the company in 1929, became vice president and assistant general manager in 1936, and executive vice president in 1942.

At a dinner in honor of Richardson's 46 years of service with the firm, Louis W. Ingram, elder son of the late Mr. Ingram, was the principal speaker.

Snevely to Conlon-Moore

James T. Snevely has been named superintendent of the enamel department of the Moore Division (Joliet, Illinois), Conlon-Moore Corporation, according to a recent report.

Snevely was with Florence Stove Company, Kankakee, Illinois, for 14 years. Most recently he was assistant enamel superintendent there.

Armco uses educational exhibits

That the porcelain enameling industry recognizes the importance of educational demonstrations and exhibits is evidenced by the fact that the subject was given a prominent place in the recent Sales and Management Conference, sponsored by the Porcelain Enamel Institute, in Cleveland.

To further encourage the use of educational type exhibits, *finish* will present, as they are made available, examples of either exhibit or demonstration material that is being used by industry members.

In the photograph reproduced here, we see a section of an Armco exhibit with the speaker demonstrating the resistance of porcelain enameled metal to thermal shock. Porcelain enamel samples are immersed in each beaker and held until the one is boiling hot and the other is ice cold, then quickly reversed. Even with this severe thermal shock the porcelain enamel coating is not damaged in any way.

There are many other simplified methods of demonstrating the outstanding qualities of porcelain enamel as a finish. Send your ideas to *finish*. They may be either entirely new ideas or those that have been used successfully in the past.

New quarters for Kraft Chemical office personnel

The office personnel of the Kraft Chemical Company, Chicago, Ill., has moved into renovated quarters on a lower floor of its building. The old offices are being remodeled to provide additional space for laboratory

facilities as well as a technical library.

Canadian bathtub production rising

An increase of 41 per cent in Canadian bathtub production is expected for 1947, as compared with last year, according to The Canadian Institute of Plumbing and Heating. This is in spite of the fact that only three out of five Canadian homes have inside running water.

Norge continues plant expansion

The Norge division, Borg-Warner Corporation, has embarked upon an expansion program which will increase production facilities substantially, it was announced by Howard E. Blood, president of the division.

According to Blood, the major step in the plan is at the Effingham, Ill., plant where gas and electric ranges are manufactured. However, output facilities in the Norge factories at Herrin, Ill., and Chattanooga, Tenn., are being increased also.

When work is completed in Effingham, total floor area will be approximately 215,000 square feet, nearly double that contained in the factory when it was purchased late in 1945. In Herrin, at the washing machine plant, floor area is being increased approximately one-fourth and factory engineers estimate that this will allow an approximate three-fold increase in production, according to Blood.

At the Chattanooga plant, interior manufacturing facilities have been increased to the extent that productivity of the factory will be virtually doubled, he explained.

1948 AGA convention in Atlantic City

The American Gas Association will hold its 30th annual convention in Atlantic City, N. J., the week of October 4, 1948.

The annual feud

finishfoto

At the December meeting of the Institute of Cooking and Heating Appliance Manufacturers, at Cincinnati, we will expect to see the two "gentlemen" shown in this snapshot

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American Ceramic Society Pacific Coast meeting

This group photo was taken at the American Ceramic Society Pacific Coast Regional meeting held in Los Angeles at the Ambassador Hotel, Oct. 16-18. Two hundred and fifty persons attended the meeting and listened to 31 papers on technical and operating subjects. An account of the meeting was carried in Nov. *finish*.

4 reasons why you make better GROUND COATS with LITHIUM MANGANITE

4 plant proven reasons *for adopting LITHIUM MANGANITE as a component for ground coat either as smelter or mill addition:*

1. Lower firing temperature and/or shorter firing time.
2. Thinner application of ground coat by reason of lower viscosity and surface tension—introduced by the Lithium Manganite.
3. Compatability of ground and cover coats fired at the same temperature.
4. Greatly improved thermal shock—by reason of both: the thinner application, and increased coefficient of expansion.

We have complete data on the proper use of this material as a smelter addition or as a mill addition for decreasing firing temperatures on hard ground coat frits.

Send for this information.
No obligation.

METALLOY CORPORATION
RAND TOWER MINNEAPOLIS, MINN
Division LITHIUM CORPORATION OF AMERICA, INC.

→ *from Page 41*

"a fightin' and a feudin'" as usual.

Actually, we understand they are the best of friends. They are, seated, William Goddard, of Floyd-Wells, and, standing, M. J. Turck, of Renown Stove Co.

PMI commends steel sub-committee

The Steel Sub-Committee of the Senate Small Business Committee was commended for their activities in connection with "gray markets" in steel, steel company owned end product manufacturing companies and shortage of scrap, in a resolution unanimously passed at a meeting of the New England District of Pressed Metal Institute, held at Hotel Sheraton, Worcester, Mass., October 7.

E. L. Hall to direct AGA testing laboratories

Edwin L. Hall, coordinator of gas production research and secretary of the general research and planning committee of the American Gas Association was appointed director of the Association's Testing Laboratories at Cleveland and Los Angeles, effective November 1, according to a joint announcement made by H. Carl Wolf, managing director of A.G.A., and Arthur F. Bridge, chairman of the laboratories managing committee and vice president and general manager, Southern Counties Gas Company, Los Angeles, Calif. Hall succeeds R. M. Conner who is resigning from active duty as director because of ill health. However, Conner will be retained in the capacity of laboratories consultant.

Hall joined the Association in May, 1945, as coordinator of gas production research. In August, 1947, he was appointed secretary of the general research and planning committee under a new and enlarged program being launched by the gas industry. The new research program calls for the expenditure of $1,800,000 for general, technical and domestic gas research over the next three years.

A visitor from Australia

finishfoto

A recent visitor at the *finish* offices was John J. Hyndes, director and manager of Metters, Ltd., Australia. Accompanied by T. Begg, works manager of Metters, Hyndes toured the United States following a trip to Great Britain. Their investigations were in the fields of porcelain enameling and foundry activities.

Metters, Ltd., are the largest producers of bath tubs, cooking stoves and holloware in Australia, having four operating plants in Sydney, Melbourne, Adelaide and Perth. It is anticipated that as a result of the visit of these gentlemen, their already large organization will be further expanded in the many fields their activities cover.

Hyndes is no newcomer to the States, having visited here in 1939. Following his visit to *finish* offices, he planned to return home via San Francisco and flying the Pacific Ocean by Australian National Airways.

Volcanic ash as a glaze medium

An investigation into the practicability of using volcanic ash on a large scale is being made by the United States Potters Association, according to word received from W. A. Betz, secretary-treasurer of the organization.

Ancient deposits have provided a most satisfactory glaze medium, and have been shown to have "a relatively long fusion temperature range," according to tests conducted by J. Sheldon Carey of the Department of Design, University of Kansas, Lawrence.

New DuPont plant in operation

A new contact sulfuric acid works at James River, Virginia, has been put in operation by the Du Pont Company. Built along modern lines, and highly mechanized, the new unit is operated by the Grasselli Chemicals Department.

Eiklor appointed general manager of Harshaw Scientific

L. F. Eiklor has been appointed general manager of The Harshaw Scientific Division, The Harshaw Chemical Company, and is in charge of all the division's activities both at the main office in Cleveland and in the branches, according to an an-

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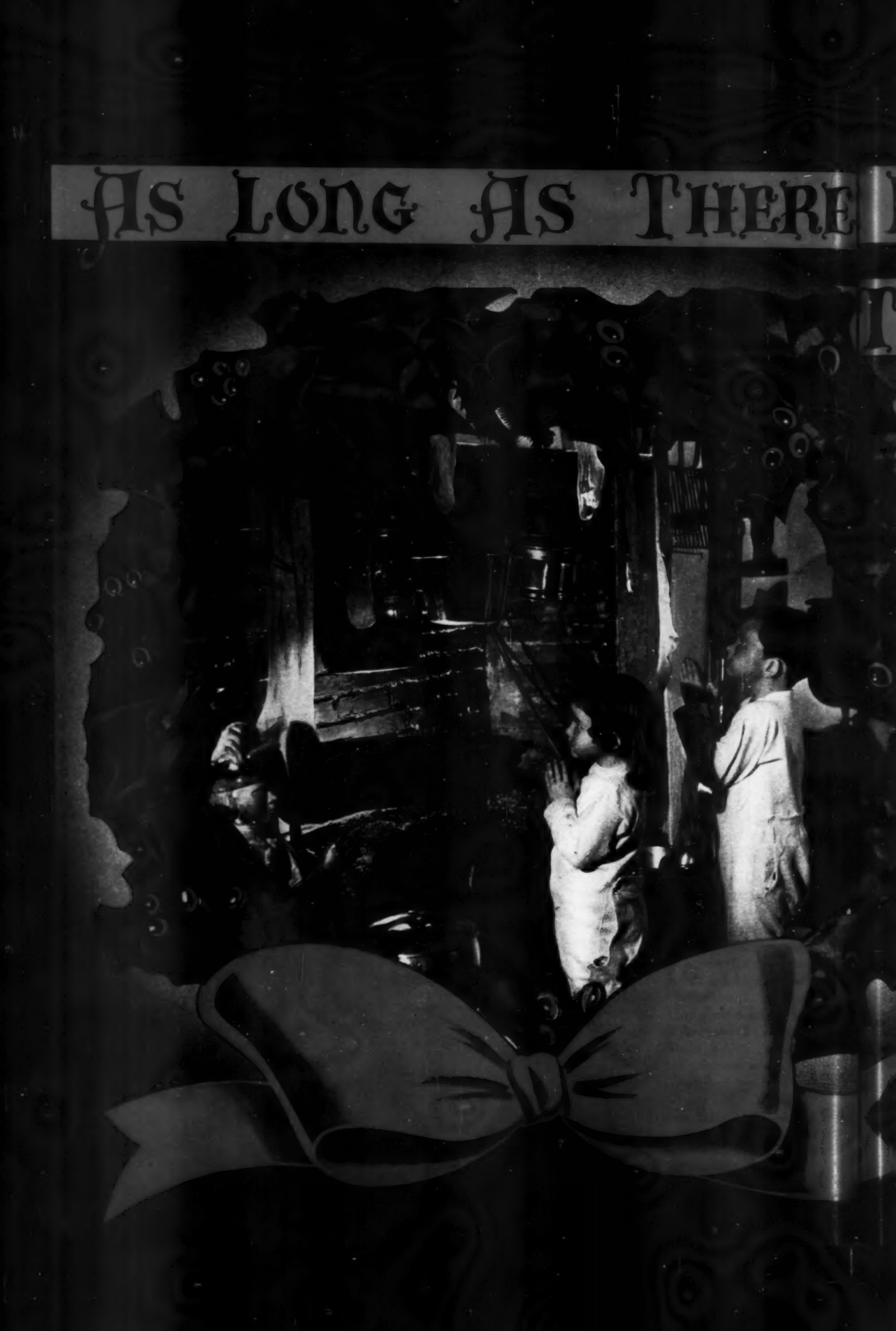
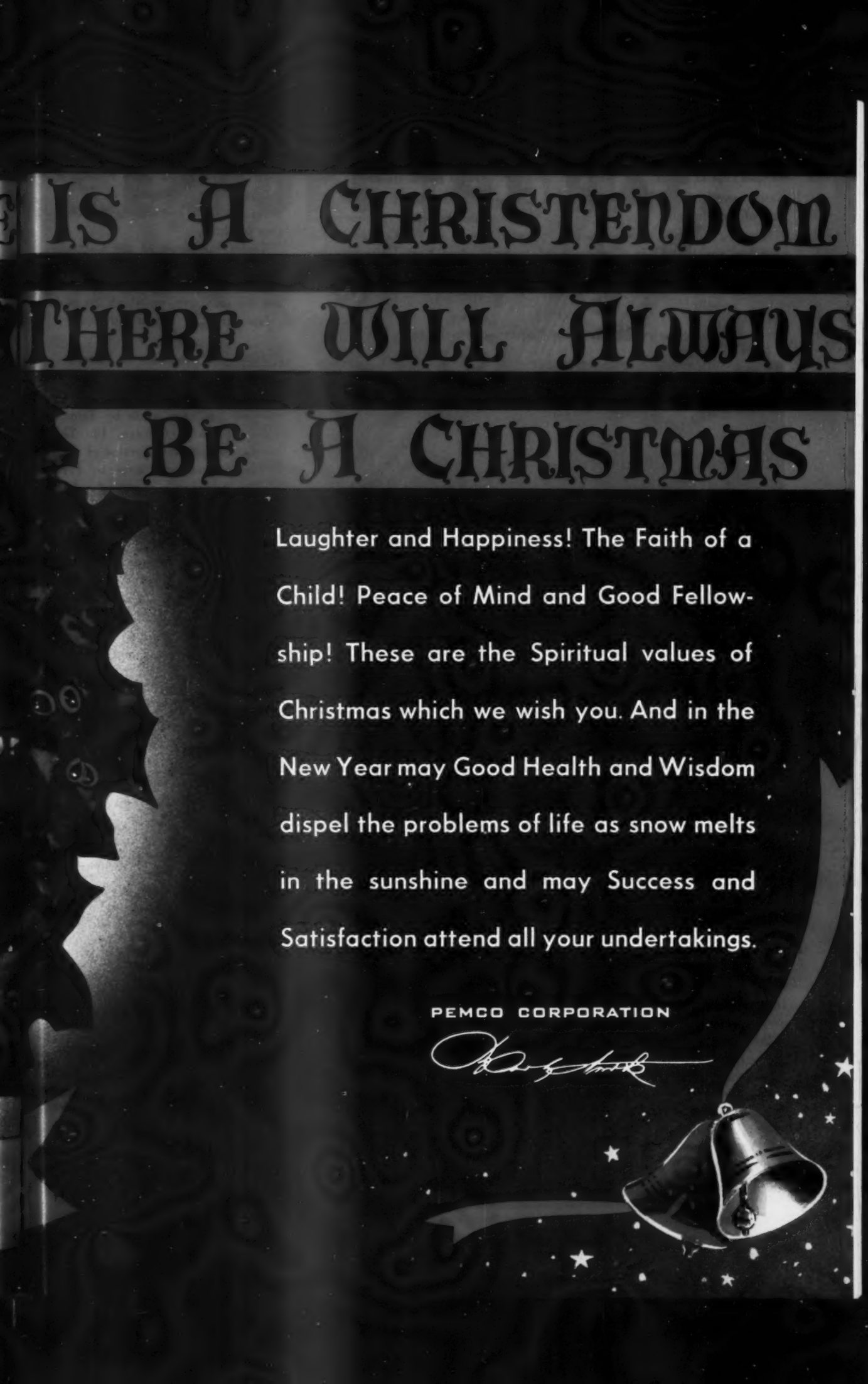

AS LONG AS THERE

E IS A CHRISTENDOM THERE WILL ALWAYS BE A CHRISTMAS

Laughter and Happiness! The Faith of a Child! Peace of Mind and Good Fellowship! These are the Spiritual values of Christmas which we wish you. And in the New Year may Good Health and Wisdom dispel the problems of life as snow melts in the sunshine and may Success and Satisfaction attend all your undertakings.

PEMCO CORPORATION



→ *from Page 43*

nouncement by W. J. Harshaw, president of the company.

Harshaw Scientific warehouses and branches are located in Cincinnati, Cleveland, Detroit, Los Angeles, and Philadelphia.

NYU appointment

The appointment of Dr. John P. Nielsen as associate professor of metal science in the College of Engineering, New York University, has been announced by Dean Thorndike Saville.

Honeywell-Brown European meeting

A growing volume of industrial instrument sales in Europe, and prospects for accelerated business activity as industrialization on the continent moves ahead, provided the main topic for discussion at a recent meeting of foreign managers of the Brown Instrument Company and its parent organization, Minneapolis-Honeywell Regulator Company.

Managers and supervisory personnel of the company's five European subsidiaries were called to London by Harold W. Sweatt, president, for the firm's first international convention since the war.

Left to right in the picture are: George Harvey and V. D. MacLachlan, England; Charles Meech, Switzerland; A. P. Taselarr, Holland; H. W. Sweatt, home office; James Fraser and A. E. Warner, England; Tom McDonald, home office; Jack Nelson, Sweden; L. R. Price, J. A. Hartnett, W. J. Swinn and C. Couling, all of England; Jan Amand, Belgium. Photo was taken by William Westphal, home office, manager of the

AGA nominating committee

A. V. S. Lindsley, vice president, The Connecticut Light & Power Company, Waterbury, Conn., is chairman of the general nominating committee of the American Gas Association. The committee will recommend the nominations for the officers and directors to be elected at the 1948 convention of the Association.

Other members elected to the nominating committee include: Joseph Bowes, president, Oklahoma Natural Gas Company, Tulsa, Okla.; William G. B. Euler, vice president and general manager, Pacific Gas & Electric Company, San Francisco, Calif.; S. H. Hobson, president, George D. Roper Corporation, Rockford, Ill.; Dean H. Mitchell, president, Northern Indiana Public Service Company, Hammond, Ind., and N. T. Sellman, vice president, Westchester Lighting Company, Mt. Vernon, N. Y.

Federal Trade Commission order

The Super-Cold Corp., Los Angeles, Calif., has been ordered by the Federal Trade Commission to cease and desist from making certain advertising representations with respect to its refrigerator display cases and from unfairly disparaging competitive products.

Under the terms of the Commission's order, among the representations prohibited is that their cases are the only ones on which the porcelain parts are formed with dies.

New vice president at Tamms

The announcement of a vice president in charge of their Foundry Division has been made by Tamms Silica Company, Chicago, Ill. The appointment, at the direction of T. J. Peterson, president, went to Fred Knisley, who has been with the firm for 25 years.

Steel Fabricators to move into new plant

Steel Fabricators, Inc., now operating in temporary quarters at 930 Baxter Avenue, will move into their newly constructed plant on a 5½ acre plot at 330 Boxley Avenue, Louisville, Ky., by January 1, it is reported.

Executives of the company are: J. V. Johnson, president; J. B. Ferree, vice president; W. F. Renard, treasurer, and Y. M. Palmer, secretary.

Hofstetter heads new Ferro Chicago office

Ferro Enamel Corporation announces the opening of new offices located at 336-338 North Central Ave., Chicago.

G. W. "Jerry" Hofstter, Ferro's

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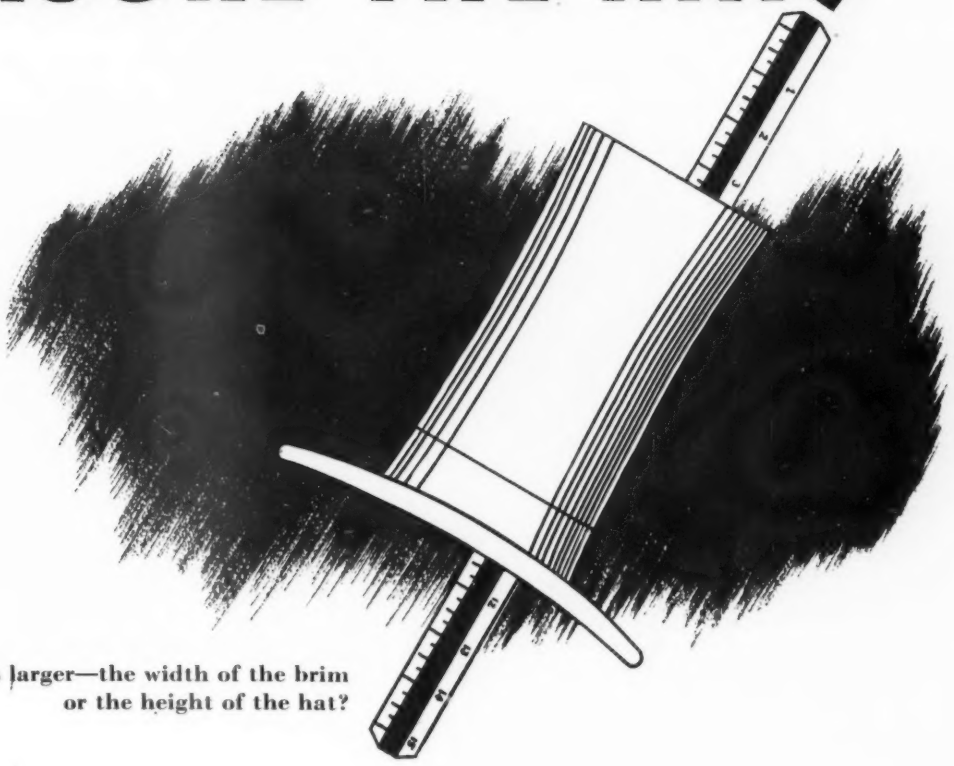
MEASURE THE HAT.



Which is larger—the width of the brim or the height of the hat?

and see for yourself

that things aren't always what they seem...

Maybe as a Vitreous customer you have wondered about our willingness to take care of all of your requirements.

As a prospective customer you think us high hat because we are unable today to supply your needs.

As a matter of fact, we are doing the best we can, both for our old friends and for people whose business we should like very much to have.

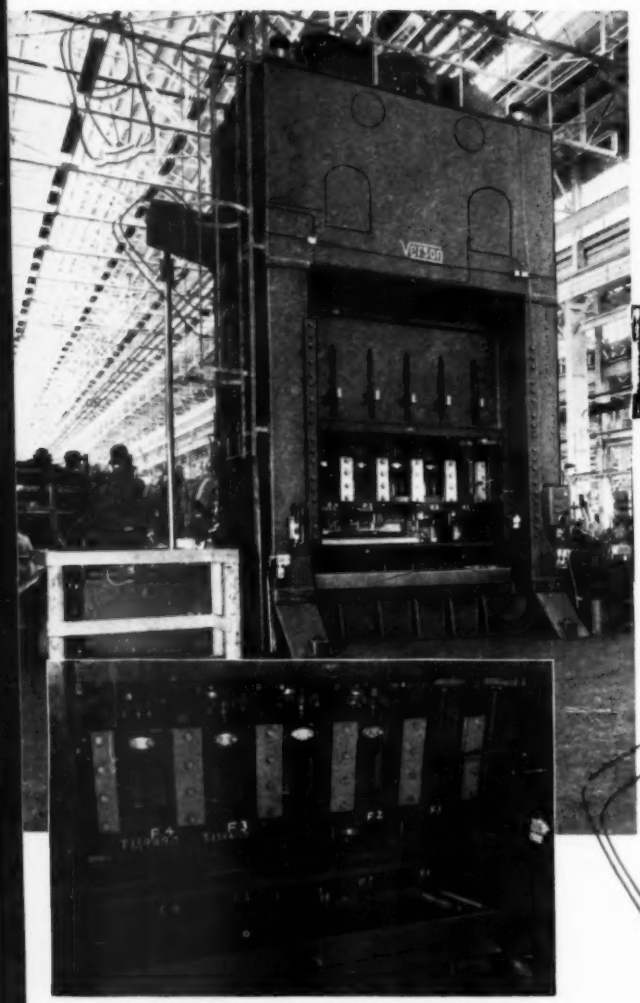
The trouble is steel — that is the bottle neck in our production. We are doing our best with a limited metal supply.

There is additional stamping and enameling capacity in our Nappanee plant. If you can supply steel, we are anxious for more business.

VITREOUS STEEL PRODUCTS CO.

BOX 1791, CLEVELAND 5, OHIO *(Factory at Nappanee, Ind.)*

A Real Producer



Close-up showing progressive stages of this manufacturing operation

Completed brake drum disks being discharged from the press

- 5 operations simultaneously on brake drum disks!
- 5 individual slides!
- 1200 tons total capacity with one station having 700 tons capacity!
- 120 inches between housings!
- Weight over 500,000 pounds!

this Verson press

. . . is speeding the production of vitally needed automobiles

With the Verson Transfer Feed Press illustrated above five operations are performed automatically in a single press. Stock is fed into the right-hand side of the press and completely formed brake drum disks are discharged at the left. Already applicable to the manufacture of coaster wagons, cooking utensils, refrigerator dehydrator pans, stove parts and many other concentric or symmetrical pieces, this method of manufacture is rapidly spreading to other fields of mass production.

VERSON ALLSTEEL PRESS CO.
9320 So. Kenwood Ave. • Chicago 19, Ill.

Originators and Pioneer Builders of Allsteel Welded Presses

YOU are cordially invited to visit the Verson Exhibit at the convention of the Institute of Cooking and Heating Appliance Manufacturers in Cincinnati December 1 to 3. It's in Booth No. 47.

POWER PRESSES • CLUTCHES • FORGING PRESSES • DIE CUSHIONS • HYDRAULIC PRESSES • PRESS BRAKES

Standardization of pH scale promoted by Bureau of Standards

THE pH unit, used to express numerically the degree of acidity or alkalinity of aqueous solutions, may be defined in a number of ways, each resulting in a slightly different value for the pH of a given solution. Consequently, several pH scales, based upon various definitions, have met with equal favor among chemists. In view of the increasing need in science and industry for accurate determinations of acidity, the National Bureau of Standards, Washington, D. C., is recommending the universal adoption of a single standard pH scale, analogous to the International Temperature Scale. It is proposed that the pH assigned to solutions of buffer substances distributed by the Bureau as standard samples be taken as the fixed points on this standard scale.

In the preparation of many commercial products — for example, paper, textiles, dyes, *ceramics*, and beer — the rapidity and efficiency of the processes depend upon accurate control of the acidity or alkalinity of aqueous solutions. Such control is now a regulatory requirement in the preparation of certain medicines and in the manufacture of paper and leather for the Government. In sugar manufacture, the inversion of sucrose can be regulated at will or avoided entirely by holding the acidity within certain limits. Similarly, regulation of the acidity of electroplating solutions permits the character of the deposit to be controlled. Another application of particular importance is the avoidance of corrosion and embrittlement of boiler walls and tubes by regulation of the acidity of boiler water. The widespread losses due to underground corrosion are likewise effectively curbed in many cases by by proper adjustment of acidity.

The several convenient pH meters now available commercially enable precise determinations of pH values in such varied media to be made with ease and rapidity, but these values are based upon a scale fixed by the pH assigned to the standards with which the instrument has been calibrated. The differences among scales of pH are the direct result of different procedures, definitions, and assumptions employed in arriving at the pH of the standard. The pH may be defined in one instance as the negative logarithm of the hydrogen-ion concentration or, again, of the effective concentration or "activity" of this ion. Often the pH value as defined by Sorensen in terms of the electromotive force of a galvanic cell with hydrogen and calomel electrodes is chosen. Although the differences among these scales rarely exceed 0.1 unit, the need for greater accuracy makes desirable the general adoption of a single series of consistent pH standards.

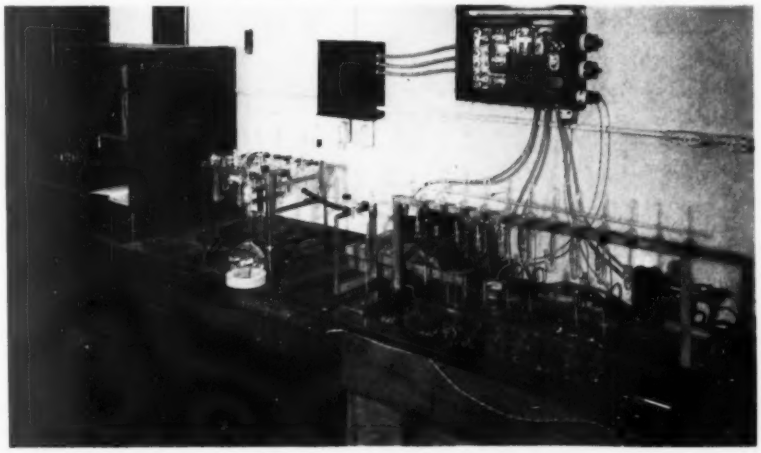
Bureau supplying buffer material

In an effort to encourage standard procedure in pH measurements, the National Bureau of Standards is now supplying four buffer materials in the form of standard samples of certified purity. These substances are acid potassium phthalate, potassium dihydrogen phosphate and disodium hydrogen phosphate (intended to be used together), and borax. They are being distributed at the rate of several hundred samples annually. The certificates furnished with these compounds specify the pH of certain aqueous solutions of the sample, which can provide fixed points on a pH scale.

In order to assign exact values to these fixed points, it was necessary to set up a scale based upon some suitable definition of pH. A consideration of the advantages and limitations of several scales led to a choice of a modified activity scale as most convenient and practical for general use. Although the activity of a single ionic species can be simply defined only in very dilute solutions, the influence of the hydrogen-ion activity in chemical equilibria is of far-reaching importance.

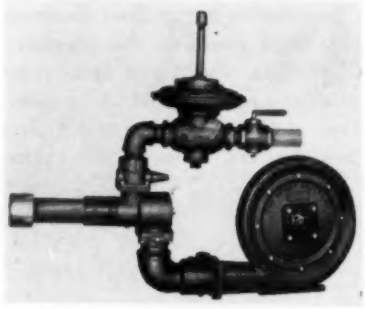
The pH of the NBS standards is derived from measurement of the electromotive force of cells without liquid junction, in which they are used as electrolytes. These cells are specially designed, utilizing the highly reproducible hydrogen and silver-silver chloride electrodes. Computation of pH is based upon several reasonable assumed relationships between ionic activities and mean activities. These assumptions are found to give identical values for dilute solutions. The scale thus obtained approaches a true scale of activity for solutions of low concentration; at higher ionic strengths it is best regarded as a consistent scale which necessarily rests upon an assumption not subject to experimental proof.

Glass cells with hydrogen and silver-silver chloride electrodes are filled with standard buffer material solutions and kept in a constant temperature bath at right while electromotive force is measured on potentiometer at left.



New Supplies and Equipment

Gas combustion assemblies

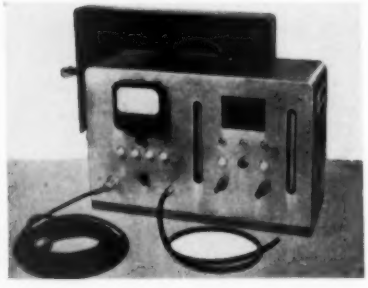


A new line of pre-engineered gas combustion assemblies are said to be ideally adapted to firing dryers, ovens, kilns, boilers, air heaters, and wherever semi-open burners with controlled flames are desired.

Combining air handling, gas supply, mixing and burning elements, the "Bryant POW-R-SEMBLIES" are normally built as single burner units, though they can also be supplied with twin-nozzle burners.

Contact Industrial Division, Bryant Heater Co., Cleveland, Ohio, for further information.

Analyzer of gases in their toxic range



Introduction of a new micro-gas analyzer for determining and analyzing the concentration of gases or vapors in their toxic range has been announced.

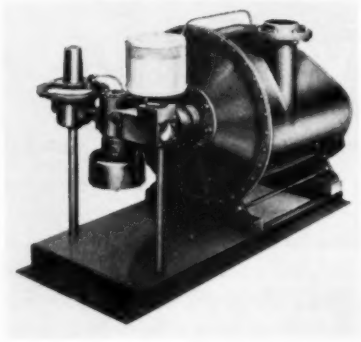
The analyzer works on the principle of electrical conductivity of solutions. Any gas which will ionize in water, with or without heat, may be analyzed in the toxic range. Included are all chlorinated hydrocarbons, carbon disulphide, hydrogen sulphide and sulphur dioxide.

This equipment is manufactured by Davis Emergency Equipment Co., Inc., 45 Halleck Street, Newark 4, N. J. Write Mercready and Company, Newark, for further information.

Adjustable-blade fans

A new line of "AXIVANE" adjustable blade fans, Series 1000, for all heating, ventilating and air conditioning requirements in industrial and commercial markets has been announced by The Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pennsylvania.

Gas-air mixer permits visible operation



A gas-air mixer that permits such features as visible operation has been perfected for the industrial gas field by a Chicago gas engineering firm. This equipment is designed to premix natural, manufactured or liquid petroleum gases with air in any desired proportion and in any desired quantity within the capacity of the unit. The mixture is then delivered to the burners under constant pressure.

A more detailed description may be obtained in a new illustrated booklet (Bulletin No. 825) released by Gas Appliance Service, Inc., 1211 Webster Avenue, Chicago 14, Illinois.

Tunnel kiln for small batch production work

A new tunnel kiln for small batch production work, firing of ceramic parts, and heat treating of small parts on a production basis, features an electric heating element providing a maximum temperature of 2200° F.

Inquiries should be directed to K. H. Huppert Co., Chicago, Illinois.

Streamlined tumbling barrel

Designed with a streamlined appearence, a new tumbling barrel has features of interest to manufacturers that deburr, burnish, clean, polish and smooth-surface metal on a mass production basis. The compact unit is simply designed for low maintenance.

For more information on this "MURCO" tumbling barrel, write D. J. Murray Manufacturing Co., Wausau, Wisconsin.

Rotary pulverizing-action drill

A new drill, which depends on a new patented rotary pulverizing action, is said to be able to drill straight, clean, true holes through any masonry-like material.

Available in 1/16″ sizes from ¼″ to 1½″ diameters, "Concrete Termite" rotary drills cut cost per hole from 75 to 85%, according to a report.

For further information, contact Concrete Termite Sales Co., 2301 Main Street, Santa Monica, Calif.

confidence
confidence
confidence
confidence
confidence
confidence
confidence

industry has confidence in

Ferro

89% of all modern
Porcelain Enameling Furnace
Installations
have been built by

FERRO enamel corp.
4150 East 56th Street, Cleveland 5, Ohio

Washer-ironer-dryer activity

(Continued from Page 20)

ing area system endorsed by washer, dryer and ironer interests, presented an analysis of it at the conference.

The fall conference was conducted by M. A. Toussaint, general manager, Simplex Division, Barlow & Seelig Manufacturing Co., and chairman of the AWIMA advertising and marketing research committee, under whose auspices the meeting was held.

Dryer committee holds first session

The new Dryer Committee of the AWIMA, at its inaugural session, immediately decided to get into residential building activities in the United States. To make sure that proper provision for installing automatic household washing dryers is made in houses to be erected, the committee made plans to conduct a special program for the information of architects and editors.

Planning of home laundries must include attention to the special installation and operating requirements for dryers, Howell G. Evans, chairman of the committee, pointed out. Evans is vice president of Hamilton Manufacturing Co., Two Rivers, Wis.

Working with Evans on the committee are Edward C. Doll, executive vice president, Lovell Manufacturing Co., Erie, Penn., and P. Eduard Geldhof, vice president, Nineteen Hundred Corp., St. Joseph, Mich.

Washer-ironer-dryer educational manual pays off

"Simple Ways to Better Cleanliness," a manual on the proper understanding and use of household washers, driers, and ironers, distributed by the American Washer and Ironer Manufacturers' Association for use by domestic science instructors and other authorities in home economics, has exceeded all expectations, according to an AWIMA reporter.

The original printing, totaling 79,000 copies, was quickly exhausted, with 62,000 going direct to schools requesting them, and 17,000 being distributed by AWIMA members. Altogether, nearly 100,000 copies of the book have been distributed.

This type of educational material is of far-reaching importance to the future market for porcelain enameled products in the washer-ironer industry, and the Association is to be congratulated on its broad policy which provides for a type of effort, the full benefit of which will be enjoyed years hence.

Radio scripts represent another service of the Washer-Ironer Association and are said to have received wide-spread use on important programs.

Industrial employee training

(Continued from Page 24)

the problems may differ between individuals.

6. *Institute plan.* This is a concentrated full time type of training and involves taking men off the job entirely and sending them to another location for several days of organized training activities.

7. *Observation and visitation plan.* In this plan individuals are given an opportunity to observe correct processes being applied.

8. *Apprentice plan.* Here the trainee must serve a specified time on each of the various jobs which go to make up a trade.

Training and educational devices

After determining which method is to be used, the next consideration is how can the information be most efficiently and effectively taught. The basic requisite is that the *instructor be skilled in the art of instruction.* In addition to this basic skill, there are other techniques or devices which should be used in doing an effective training job: visual aids (films, pictures, charts); conference techniques; case study techniques; presentation or lecture techniques; demonstration technique; question and answer technique; manuals, pamphlets and folders; mock-ups and demonstration panels; cut-away sections and parts; operating miniatures.

Conclusion

It is understood that the material covered has been presented too briefly to give an opportunity for full understanding. If, however, the impression has been gained that a training problem must be approached in the same careful analytical manner in which a design or any other problem is approached and is not a matter of simply calling a group of people together, then the effort has been successful.

The company that establishes a well organized training program, intelligently set up and carefully administered, with the support and participation of top management—and the management who will regard this training as a valuable implement at their disposal—will enjoy eight important advantages from such training. When considered in it's entirety the task seems overwhelming. However, it is simply a matter of selecting a starting place and working from that point.

Advantages of Well Organized Training

1. Reduces unit cost.
2. Improves efficiency — increases production.
3. Improves human relations.
4. Reduces formal grievances.
5. Establishes basis for promotion and upgrading.
6. Reduces labor turnover.
7. Standardizes company practices and policy interpretation.
8. Welds all levels of management together.

Adapted for finish *from a talk before the Porcelain Enamel Institute Ninth Annual Forum.*

The new, improved porcelain enameled utensils are beginning to appear on the market in greater quantity. Homemakers will be purchasing this kitchen ware in abundance because it is designed to give greater ease in handling and cooking.

Permanent, completely fireproof, porcelain enameled ship's bulkheads are now being supplied in colors to suit decorative treatments anywhere on a ship.

PROTECT THOSE VALUABLE FINISHED PRODUCTS With the Right Box or Crate

★

PLYWOOD

WIREBOUND

HINGE CORNER

NAILED CRATES

★

Consult with our packing engineers on product protection — Our designing and testing laboratory is at your service, without obligation.

CHICAGO MILL AND LUMBER COMPANY

33 South Clark Street Chicago 3, Illinois

Plants at: Helena, Ark. • Greenville, Miss. • Tallulah, La. • Rockmart, Ga. • Chicago, Ill.

COMPLETE *Finishing* SYSTEMS

for ENAMEL • LACQUER • PAINT

Above: View from above showing two Combination Spray Booth-Dryers for rapid economical painting of Railroad Coaches. Below: Interior of Mahon Combination Spray Booth-Dryer showing workmen spraying on Electrically Operated Scaffold-Elevators.

The finish on your product will take on a greater importance in the near future when the gap between supply and demand narrows down into a buyer's market. Now is the time to safeguard future sales volume by installing modern Finishing Equipment. Regardless of what your product is—railroad coaches, buses, automobiles, refrigerators, stoves, washers or the smallest radio cabinet—the Mahon organization stands ready to plan, engineer, build and install complete ultramodern equipment to handle your cleaning, rust proofing, drying, painting and baking operations efficiently and economically. Mahon Finishing Systems are in operation all over the world . . . twenty-seven years of experience and pioneering development, in this highly specialized field, have endowed Mahon engineers with a wealth of technical knowledge and practical know-how not available elsewhere. See Mahon's insert in Sweet's Mechanical Industries File, or arrange consultation with Mahon engineers.

THE R. C. MAHON COMPANY

HOME OFFICE and PLANT Detroit 11, Michigan • WESTERN SALES DIVISION, Chicago 4, Illinois

Engineers and Manufacturers of Complete Finishing Systems and Many Other Units of Special Production Equipment

MAHON

Selling porcelain enamel to the architect

(Continued from Page 23)

is that when building construction goes up like a skyrocket, sooner or later the skyrocket stick is going to come back down and hit you right square on the noggin. Sooner or later building material is going to be sold again on a price basis and it is well for all of us to keep that important fact in mind.

This then, very briefly, in an analysis of how your product compares on the three points of *plasticity*, *performance* and *price*. It seems to me that it has a high rating on all three. I believe that it has been well-engineered and intelligently sold and serviced in the past, and I believe that you have only scratched the surface of the potential uses of porcelain enamel.

Adapted for finish *from a talk before the Porcelain Enamel Institute First Sales and Management Conference.*

New faces for old with architectural porcelain enamel

(Continued from Page 25)

occurs, we will find that the porcellain enamel front will remain intact and that the heavy masonry fronts will become cracked and dangerous. (5) This area has a large sulphur content in the air which tarnishes and discolors any exterior facing material. We have found that porcelain enamel can be cleaned with soap and water and restore the surface to its original luster. This is not true with structural glass, architectural stone or marble."

The Keith O'Brien store is featured on the inside front cover of "How Architectural Porcelain Enamel Produces Profits," a booklet published by the Porcelain Enamel Institute.

Of the Salt Lake City installation, the booklet says, "By remodeling an old structure, and facing with light weight Architectural Porcelain Enamel, the beauty and utility of a new building were obtained at a minimum of expense and inconvenience to the business."

Second international lighting exposition and conference

(Continued from Page 27)

Seal and Merit Award Certificates was made at the opening session. Carl W. Zersen, Chicago Lighting Institute, was chairman of the board of judges who awarded 12 Gold Seal $100 Awards and 183 Merit Award Certificates.

In the winning Gold Seal group were six store lighting installations, one bank, one floodlighting, two industrial, one bank and one restaurant. All the winning entries were on display. The competition was sponsored by the Industrial and Commercial Lighting Equipment Section of the National Electrical Manufacturers Association.

Porcelain enamel in evidence

Many exhibits featured porcelain enameled reflectors for both fluorescent and incandescent lighting fixtures. Manufacturers of electrical appliances lauded porcelain enamel for its reflectance, cleanability and permanence. Several manufacturers lamented the fact that material shortages prevented them from making the change over to porcelain enameled reflectors.

Industry news

→ *from Page 46*

midwest sales and service manager, will make his headquarters at the new location. The new offices will serve Ferro customers in the porcelain enamel, pottery, synthetic finishing and allied fields for the entire Chicago territory.

AGA Industrial Gas breakfast

During the National Metal Congress and Exposition in Chicago, the Industrial and Commercial Gas Section of the American Gas Association held its traditional breakfast, combining in an informal get-together the industrial gas men and editors of metal trade magazines.

Chairman of the meeting was Leon Ourusoff, Washington Gas Light, Washington, D.C., who replaces Karl Emmerling as chairman of the Section.

Featured speaker for the occasion was Gerald E. Stedman. *(See Stedman's descriptive plant articles in finish.)* Stedman's talk, "What's Ahead for Industrial Gas," was based to a great extent on observations from 936 plant visits which he has made since 1943.

Kent R. VanHorn, of Aluminum Company of America and chairman of ASM, outlined policies of the Metal Congress and announced that the 1948 Congress will be held in Philadelphia the third week in October.

Pressed Metal Institute appointment

The appointment of Jerry Singleton as assistant to the president has been announced by Tom J. Smith, Jr., president of the Pressed Metal Institute, 829 Union Commerce Building, Cleveland, Ohio.

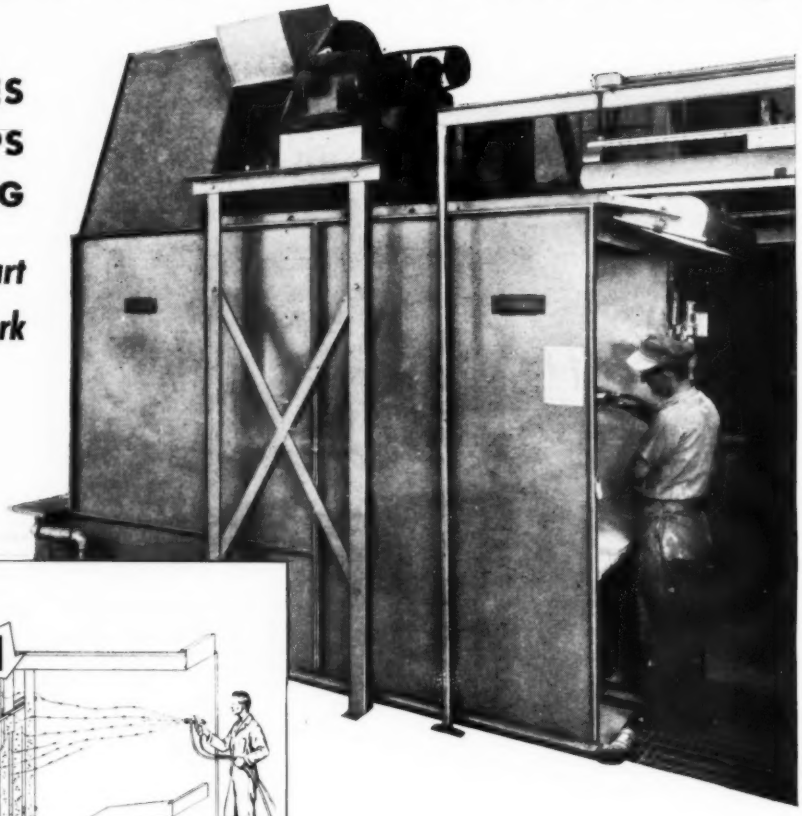
Smith reports that Singleton has had more than 20 years experience in contact work with trade associations and will assist in organizing

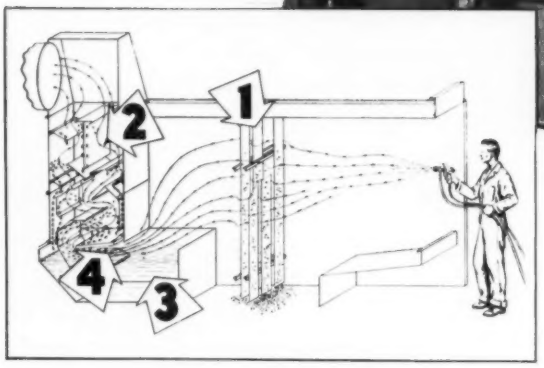
to Page 60→

The DE VILBISS

NO NOZZLES
NO PUMPS
NO PIPING

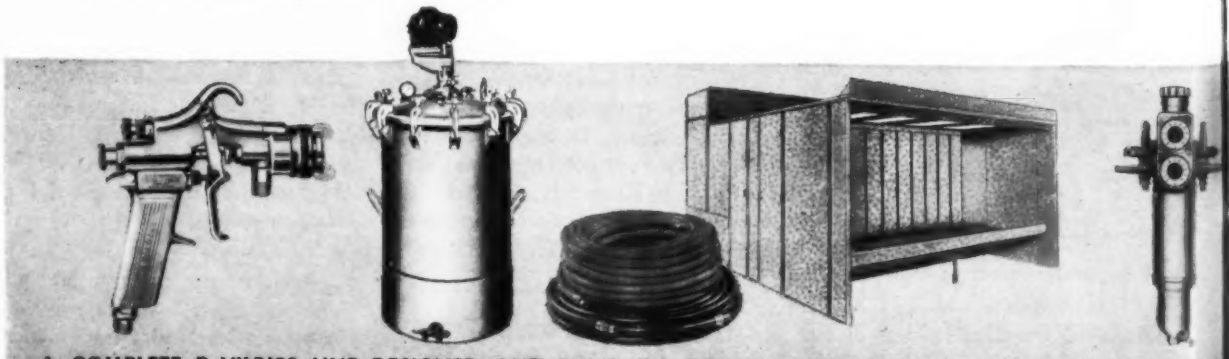
Only one moving part does all the work





1. Baffles arrest most of overspray in dry form.
2. Water-wash chamber removes balance of overspray.
3. Tank accumulates water precipitated solids.
4. Water is picked up here for centrifugal wash.

UP TO
99.3% OF OVERSPRAYED MATERIAL RECOVERED



A COMPLETE DEVILBISS LINE DESIGNED AND BUILT FOR PORCELAIN ENAMELING AND CERAMIC FINISHI

CENTRIFUGAL WATER-WASH SPRAY BOOTH

Saves its Cost in reclaimed material

Here is a revolutionary new DeVilbiss spray booth for porcelain enamel and ceramic finishing that actually pays for itself. Not only does *it recover up to 99.3% of over-sprayed solids*—it saves money because *it requires no maintenance.*

Only one moving part—the blower—does all the work and even its bearing is outside the exhaust duct. Nozzles, pumps, and piping, ordinarily subjected to severe abrasion, are entirely eliminated. There is nothing to wear out—nothing to require replacement or repair. Self-cleaning baffles replace eliminators and need never be removed. Static pressure always remains constant and consequently *the spray booth maintains a continuous exhaust efficiency never before equaled.*

Doors provide easy access to collection compartment in front of distributing plates and to the water wash chamber for quick removal of reclaimed material.

It will pay you to investigate the unusual features of this new DeVilbiss Centrifugal Water-Wash Spray Booth. It will pay you, too, to consult your DeVilbiss Engineer for information on every item in the complete ceramic line. There is no obligation, of course.

THE DEVILBISS COMPANY • TOLEDO 1, OHIO

Canadian Plant: WINDSOR, ONTARIO

DE VILBISS *means* **Quality** *in all four . .*

DV

SPRAY EQUIPMENT
EXHAUST SYSTEMS
AIR COMPRESSORS
HOSE & CONNECTIONS

New industrial literature

Patterns of business organization

Information on general principles and patterns of business organization has been published in a report, "Business Organization."

The report shows that since the war there has been an accelerated trend toward decentralization of business organizations with greater executive authority for operating units. A study of organizational plans of 27 companies was used in compiling the report.

A limited supply is available through letterhead request from Policyholders Service Bureau, Metropolitan Life Insurance Company. 1 Madison Avenue, New York 10, N. Y.

Bulletin on furnace instruments

Bulletin No. 47-842, "Hays Instruments and Controllers for Glass Furnaces, Ceramic Kilns, and *Enameling Furnaces*," contains latest information on instrumentation of furnaces and kilns used in the trades mentioned.

Write for a free copy to The Hays Corporation, Michigan City, Indiana.

Dust and fume eliminators

A 12-page folder, "Schmieg Centri-Merge Swirl Type Dust and Fume Eliminators," is now available from Schmieg Industries, Inc., 364 Piquette Avenue, Detroit 2, Michigan.

New book on advertising

"Training Advertisements to Sell" is the title of a new book by Marshall Adams, advertising and sales promotion director of Mullins Manufacturing Corporation's Youngstown Kitchen division, Warren, Ohio.

Adams's book sets up a basic measuring stick by which to judge whether or not an advertisement has all the elements necessary to bring desired results.

The book is being released through National Marketers' Press, 13511 Lake Shore Blvd., Cleveland 10, Ohio.

Illuminated magnifier catalog

A new catalog on an illuminated magnifier for all types of inspection has just been published. All models of the "Flash-O-Lens" magnifier are illustrated in the catalog which includes information for use in the metal products and paints and finishes fields.

Contact E. W. Pike & Co., 492 North Avenue, Elizabeth 3, New Jersey.

Color movies available from AGA

The following sound-color movies are available from the American Gas Association: "Winning Seals of Approval" and "The Flame of Freedom." Both are available at no charge to private or public schools and col-

PORCELAIN ENAMELING

Capacity Available

Have two continuous furnaces available for eight hours each day. Also, have ground coat line and Binks automatic white spray line open at the same time. Plant is totally conveyorized.

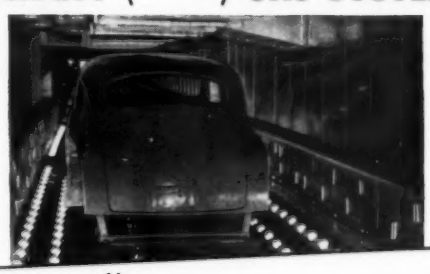
Can handle stove parts, table tops, and similar ware. Also, washing machine tubs, small bathroom sinks, heaters, hydrator pans, inner and outer roaster wells, reflectors, etc.

Address:

THE CLEVELAND CO-OPERATIVE STOVE CO.
Plant No. 3, Vitreous Enameling Division
2323 East 67th St., Cleveland 4, Ohio

One of America's Largest Motor Car Manufacturers Installs

BURDETT (INFRA-RED) GAS SYSTEMS



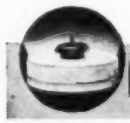
They say this:
1. A Superior Finish—Both in Looks and Wear
2. A 66% Saving in Paint Drying Time

The problem . . . produce more cars for the greatest demand in history and give them the finest possible finish. The answer . . . Burdett Infra-Red Gas Systems. Paint drying time drastically cut from 45-55 minutes down to 9½-17 minutes.

That's not all. The auto company says, "Not only is this finish superior in appearance, wearing qualities and freedom from 'orange peel' to anything previously attained, but it also is possible to complete the drying process much faster than ever before, and to reduce the consumption of fuel in the dryer."

Write for all-new 12-Page Illustrated Booklet.

3401 West Madison St., Chicago 24, Ill.



BURDETT MANUFACTURING CO.
INFRA-RED GAS BURNERS

These are the companies that brought 1947 finish to you

1947 ADVERTISERS IN FINISH

Alliance Ware, Inc.
American Cyanamid & Chemical Corp.
American Rolling Mill Company, The
Binks Manufacturing Company
Bliss & Laughlin, Inc.
Boland Company, Albert J.
Boston Stove Foundry Company
Brown Instument Company
Burdett Manufacturing Company
Century Vitreous Enamel Company
Ceramic Color & Chemical Mfg. Co.
Chicago Mill & Lumber Company
Cleveland Co-Operative Stove Co.
Cowles Detergent Company
DeKalb Enameling Company, Inc.
Despatch Oven Company
DeVilbiss Company, The
Dings Magnetic Separator Company
Drakenfeld & Company, B. F.
Du Pont De Nemours & Co., Inc., E. I.
Ferro Chemical Corporation
Ferro Enamel Corporation
Frantz Company, Inc., S. G.
Harshaw Chemical Company, The
Hommel Company, O.
Huyck Construction Company
Illinois Water Treatment Company
Industrial Enameling, Inc.
Industrial Filter & Pump Mfg. Co.
Ingram-Richardson Mfg. Co. of Indiana
Koch Sons, Inc., George
Kraus Research Laboratories
Lawndale Enameling Company
Logan Engineering Company
McDanel Refractory Porcelain Co.
Mahon Company, R. C.
Metal & Thermit Corporation
Metalloy Corporation
Metalwash Machinery Company
Mullins Manufacturing Corporation
New Monarch Machine & Stamping Co.
Northwest Chemical Company
Orefraction, Inc.
Patterson Foundry & Machine Company
Pemco Corporation
Pennsylvania Salt Manufacturing Co.
Peters-Dalton, Inc.
Republic Steel Corporation
Robbins & Myers, Inc.
Robertshaw Thermostat Company
Rohm & Haas Company
Rotospray Manufacturing Company
Titanium Alloy Mfg. Company, The
Tuttle & Kift, Inc.
Van Straaten Chemical Company
Verson Allsteel Press Company
Vitreous Steel Products Company
Vitro Manufacturing Company
Wirebound Box Manufacturers Assn.
Youngstown Sheet & Tube Company, The

FINISH

(Trade publication for the ceramic finishing industry)

THE AGENCIES . . .

Addison Lewis & Associates
Minneapolis, Minnesota
Advertising Producers—Associated, Inc.
Chicago, Illinois
Anderson, Inc.
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Bayless-Kerr Company
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Chicago, Illinois
Brooke, Smith, French & Dorrance, Inc.
Detroit, Michigan
Buckley & Associates, Inc. Homer J.
Chicago, Illinois
Chessler Company, Maurice
Baltimore, Md.
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Eby, Hyatt
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Erwin, Wasey & Co., Ltd.
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Fuller & Smith & Ross, Inc. (Two Accounts)
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Hixson-O'Donnell Adv., Inc.
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Pittsburgh, Pennsylvania
Smith, Taylor & Jenkins, Inc.
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Stewart Company, James A.
Pittsburgh, Pennsylvania
Walker Advertising, Harold C. (Two Accounts)
Minneapolis, Minnesota
Walker & Downing
Pittsburgh, Pennsylvania
Wamsley, Gage Rex
Chicago, Illinois
Wright, Geo. Wilfred
Newark, N. J.

DANA CHASE PUBLICATIONS

360 N. Michigan Ave. **Chicago 1, Illinois**

leges. The former may be gotten by writing to Modern Talking Picture Service, Inc., 9 Rockefeller Plaza, New York 21, N. Y. The latter may be had by writing to H. Vinton Potter, Director, New Freedom Gas Kitchen Bureau, American Gas Association, 420 Lexington Avenue, New York 17, N. Y., if not available through local gas utility companys.

NEWS → *from Page 55*

new district groups and in securing new members.

Bennett Chapple, Jr. on steel

United States Steel will leave no stone unturned to raise production to the highest possible levels consistent with sound business practices, it was declared by Bennett S. Chapple, Jr., assistant vice president, United States Steel Corporation of Delaware, in an address before the convention of the National Association of Sheet Metal Distributors and the National Wholesale Hardware Association at Atlantic City, N. J.

Chapple pointed out that the steel industry has been attempting since the end of the war to perform simultaneously two separate tasks — first, replenishment of the inventories which are needed to safeguard the production lines of industry, and second, the production day by day of the steel needed to keep those production lines operating.

Mullins expanding during 75th year

Installation of new booths and other equipment in Mullins Manufacturing Corporation's Plant 3, Salem, Ohio, is part of the million dollar improvement program gotten underway during the firm's 75th anniver-

Jobbing Service for Midwest Manufacturers

DECO

PROMPT enameling service is available to Midwest manufacturers of all types of fabricated steel and cast iron parts requiring a lifetime finish.

Served by the Great Western, Milwaukee and Northwestern railway lines, and located on U. S. Route No. 30, DeKalb Enameling is equipped to rush porcelain enameled parts to busy assembly lines.

DeKalb Enameling Co:, Inc.

QUALITY PORCELAIN ENAMELING

Telephone 2471

204 North 4th St. DeKalb, Illinois

Porcelain Enameling Capacity Available

Continuous furnace plant with automatic white and ground coat spray lines available for one shift daily for steel and cast iron.

Excellently equipped for flat ware, table tops, stove parts, reflectors and similar items in production quantity.

BOSTON STOVE FOUNDRY COMPANY

155 John Street Reading, Mass.

Telephones: 1045-1046

sary year. The photo shows the first "Youngstown Kitchen" wall cabinet going through the new paint spraying booths.

Keller appointed factory manager at Florence Stove's Gardner plant

Theodore E. Keller has been appointed general factory manager of Florence Stove Company's Gardner plant, it was announced by Edward F. Dobson, president. Keller succeeds Harold O. Berry who resigned recently.

Keller's previous experience includes 7 years as factory manager of General Instrument Corp., Elizabeth, N. J., and 13 years as factory manager of Colonial Radio Corp., Buffalo, N. Y.

AGA officers for 1947-48

The following officers will head the American Gas Association for the coming year:

President, Hudson W. Reed, president, The Philadelphia Gas Works Co.; First Vice President, Robert W. Hendee, president, Colorado Interstate Gas Co.; Second Vice President, Hugh H. Cuthrell, vice president, The Brooklyn Union Gas Co.; Treasurer, Edward F. Barrett, president, Long Island Lighting Company.

Stewart-Warner to celebrate thirty-fifth anniversary

An open house and plant tour for employees, their families and friends, will be held December 13, at the Stewart-Warner Corporation plants at 1826 West Diversey Parkway, Chicago, to mark the 35th anniversary of the founding of the present company, James S. Knowlson, chairman of the board and president, has announced.

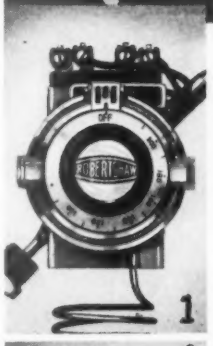
Canadian Ceramic Society annual meeting

The Canadian Ceramic Society Annual Meeting will be held at the General Brock Hotel, Niagara Falls, Ontario, Canada, February 9, 10 and 11, according to an announcement by Wm. McGolpin, president. A joint meeting with the New York Upstate Ceramic Society will be held on the first day of the annual meeting.

Bleininger Memorial Award

The Albert Victor Bleininger Memorial Award has been established by the Pittsburgh Section of the

CHECK YOUR THERMOSTAT NEEDS



1

2

3

1 DOUBLE POLE, SINGLE-THROW THERMOSTATS with direct or reverse action

2 COMBINATION THERMOSTATS WITH SELECTOR SWITCH and automatic cut-off of pre-heat

3 COMBINATION THERMOSTATS with limiting switch, automatic over-temperature cut-out, manual reset

No separate "off" switches are needed with Robertshaw direct acting Electric Thermostats. They have the Robertshaw exclusive mechanical, non-fatiguing snap-action actuated by a powerful hydraulic expansion element. When the temperature rises, contact arms are forced away from contacts by a powerful positive snap-action which produces instant, clean break of circuit. Mechanism is extremely sensitive and accurate to very close differentials.

Long life and dependability are insured by contacts and contact bridges of fine silver, hardened steel levers and supports, stainless steel diaphragm, and bakelite insulators. Snap-on dials permit temperature adjustments to be made without removing control from mounting box.

Other Robertshaw models for a wide variety of commercial, light industrial and home appliance uses are available.

Write for bulletins and complete information.

ROBERTSHAW

ROBERTSHAW-FULTON CONTROLS CO.

YOUNGWOOD, PA.

American Ceramic Society as an annual award for distinguished achievement in the field of ceramics. The award is a memorial to the late Dr. Albert Victor Bleininger, founder of the Pittsburgh Section.

PMI to meet in Buffalo

The annual meeting of the Pressed Metal Institute will be held February 10 and 11, Hotel Statler, Buffalo, N.Y.

5,000,000th Maytag washer

The 5,000,000th washer came off the assembly line of The Maytag Company, Newton, Iowa, October 24. In honor of the occasion, Iowa Governor Robert D. Blue and leaders in business, industrial, labor and civic circles paid tribute to the Maytag organization at a ceremony and luncheon held at the Newton factory.

"This is possibly a classic example of capitalism at its best," Fred Maytag II, third generation president, said of the production achievement.

Chicago enamelers meeting

The Chicago District Enamelers Club will meet Saturday noon, December 6, at the LaSalle Hotel. Dr. A. I. Andrews will discuss "Property Engineering in Porcelain Enamels," and Herbert Van Straaten will speak on "Drawing Compounds for Porcelain Enamels."

ACS section news flashes

Northern Ohio Section of the American Ceramic Society will hold its next meeting December 4. The Section's first fall meeting was held November 6, and was attended by 70 members and guests. Homer McRae, North American Manufacturing Co., and R. J. Boyink, Standard Oil of Ohio, were guest speakers.

Philadelphia Section future meetings have been set as follows: January 23, March 25, May 27, and in June.

Pittsburgh Section will be addressed by ACS President John Sullivan at their regular monthly meeting, Tuesday, December 9.

Ceramic Association of New Jersey held its fall meeting at Rutgers University, October 25, with 160 persons present. Dr. Robert B. Sosman, Rutgers' School of Ceramics, discussed "Thermometric Scales and Their Scientific Basis."

Central enamelers meeting

The Central District Enamelers Club will meet Friday evening, December 12, at the Allerton Hotel, Cleveland, Ohio. The program will include a discussion on "Low Temperature Enamels," reports M. Bozsin, club secretary-treasurer.

PEI board meeting

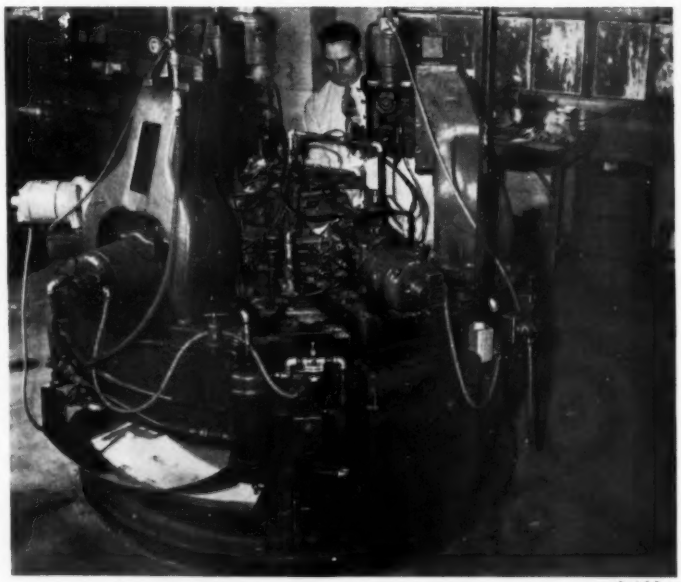
A meeting of the Porcelain Enamel Institute Board of Trustees has been called by President Dudley Clawson for 10:00 a.m., Thursday, December 4, Netherland-Plaza Hotel, Cincinnati, Ohio.

The principal discussion will concern expanding Institute membership and consideration of recommendations made by the Executive Committee at its November 6 meeting, said Ed Mackasek, PEI secretary.

Majestic in new plant

Majestic Manufacturing Company has announced the moving of its general office and plant to 4550 Gustine Ave., St. Louis 16, Mo.

Ferro subsidiary in production on rotor-type valve



finishfoto

Typical equipment unit in the Kirkland plant. This is a "Kingsbury Automatic" used to machine eight separate operations on the valve body.

Certified Gas Equipment, for a number of years an affiliate of Tuttle & Kift, Inc., Chicago manufacturers of electric range surface heating units and electric switches, and now a subsidiary of Ferro Enamel Corporation, is now in full production in it's new plant in Kirkland, Illinois.

The product of Certified Gas is a brass rotor type gas valve for use on gas ranges and all other standard types of gas appliances. The rotor and slide valve principle is similar to that used by the railroad air brake. The new valve is reported to be available in "Hi-Lo" and "Single Purpose" types with provision for locking in the "off" position.

A feature of the new plant is the modern automatic machining equipment for the high speed production of parts with extremely close tolerances.

Officers of the company are: Wm. Robinson, president; D. B. Kift, vice president and treasurer, and H. F. Bond, secretary. Kift is also executive vice president of Tuttle & Kift, and Bond is vice president of the same firm.

O. HOMMEL CO.

World's Most Complete Ceramic Supplier

ONLY THE FINEST MATERIALS THAT SKILL, EXPERIENCE AND SCIENCE CAN DEVELOP ARE IN EVERY HOMMEL PRODUCT.

Laboratory Controlled Production of Ceramic Supplies

- FRIT for Steel, Cast Iron or Pottery
- CERAMIC COLORS
- CHEMICALS
- BRONZE POWDERS
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